



# 330 Java Tips



Version 1.5

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I BET that MOST of Java programmers  
CAN NOT ANSWER  
my SIMPLE QUESTION...

A few words about next version "500 Java Tips".

[Please read here](#)

- |  |  |   |
|--|--|---|
| <a href="#">Applets</a>                          | <a href="#">Databases &amp; beans</a>      | <a href="#">File Systems I, II</a>              |
| <a href="#">Distributed systems</a>              | <a href="#">Graphics, AWT, Swing-I, II</a> | <a href="#">General Java I, II, III, IV</a>     |
| <a href="#">Job, fun...</a>                      | <a href="#">Miscellaneous</a>              | <a href="#">Networking</a>                      |
| <a href="#">OSs &amp; Java</a>                   | <a href="#">Servlets &amp; Servers</a>     | <a href="#">Sound &amp; Multimedia</a>          |
| <a href="#">String, text, numbers, I/O-I, II</a> | <a href="#">Threads</a>                    | <a href="#">Where the tips are coming from?</a> |

Excuse me for possible mistakes! English is not native language for me.  
I will be glad if you send me your corrections of my mistakes!

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# 330 Java Tips

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## Applets

### I've got problems with the Socket class (network)

I've got problems with the Socket class. I use it inside an applet (I've written a small chatbox). I have code like this:

```
Socket s = new Socket("192.168.0.4", 13780);
```

When the server I'm connecting to is on the same machine as the client, it works. When the server is an other machine, both NS and IE give an error message like:

Security:Can't connect to 192.168.0.4 with origin "

Does anyone know how I can fix this??

Answer: The standard security concept for an applet is the 'sandbox'. An applet can't talk outside it's memory space, can't talk to any files at all, and cannot talk to anything on the internet except the same machine that it's 'parent' HTML page originated from. So your applet can never talk to 192.168.0.4 unless the HTML came from 192.168.0.4

### How do I view the error output from my Java applets in IE?

Answer: The file windows\Java\JavaLog.txt contains info about the last Applet loaded in IE. All the System.out messages and exception information is stored here when Java Logging is enabled in IE. To enable Java Logging start IE and select View/Options/Advanced. Select "Enable Java Logging" check box click OK. Restart IE.  
In NT4 the file in C:\WINNT\Java

### Is there a way to reduce the amount of time that it takes to download an applet?

Answer: There is a way to reduce the amount of time an applet takes to download. What ever classes the Java applet is referring, you cluster them in a JAR file with the help of JAR utility that comes with the JDK version. Check out the help for the options of that utility and make a ".jar" file out of the applets referred classes and images and other relevant data which you want to load.

Use the archive option of the applet tag and assign the .jar file:

```
<applet code="xyz.class" archive="pqr.jar" width=100 height=100>
</applet>
```



When I reload my applet my hidden canvas is shown directly! Why?

Answer: Put `mycanvas.setVisible (false);` in `Start()` rather than `init()`...



I want to be able to print debugging text messages during the whole applet's lifetime. Is there an easy way to do that???

Q: I'm a beginner in java. Right now i am doing an applet and i want to write messages to the browser window for debugging purposes i.e. to follow how the applet executes. Like when i'm developing an C++ application i usually use lots of "couts" to check values and the programs behavior. Is there an easy way to do things like that when making a Java applet? For me it seems like everything happens in a function called "paint(graphics g)" and that function is only called at the beginning of the applet start. I want to be able to print text messages during the whole applet's lifetime. Is there an easy way to do that???

Answer: you'd be better off doing a  
`System.out.println("the value is " + whateverValue);`

This will show up in the java console. to see it in ie5, do View->Java Console, and in netscape4.7, do Communicator->Tools->Java Console and it will pop up the java console window.

If you are doing it in appletviewer from dos, it will show up in the dos window you used to call appletviewer.



What are restrictions for applet?

Q: What are applets prevented from doing?

Answer: In general, applets loaded over the net are prevented from reading and writing files on the client file system, and from making network connections except to the originating host.

In addition, applets loaded over the net are prevented from starting other programs on the client. Applets loaded over the net are also not allowed to load libraries, or to define native method calls. If an applet could define native method calls, that would give the applet direct access to the underlying computer.



Q: I am writing an applet that will use images. I would like to ship out the images using a jar file that contains all the images that the applet is going to use. I have seen a piece of code that does that in the past, but I don't remember where.

Answer: by David Risner The following is from:  
<http://developer.netscape.com/docs/technote/java/getresource/getresource.html>

```
import java.applet.*;
import java.awt.*;
import java.io.*;
```

```
public class ResourceDemoApplet extends Applet {
    Image m_image;

    public void init() {
        try {
```



```

        InputStream in = getClass().getResourceAsStream("my.gif");
        if (in == null) {
            System.err.println("Image not found.");
            return;
        }
        byte[] buffer = new byte[in.available()];
        in.read(buffer);
        m_image = Toolkit.getDefaultToolkit().createImage(buffer);
    } catch (java.io.IOException e) {
        System.err.println("Unable to read image.");
        e.printStackTrace();
    }
}

public void paint(Graphics g) {
    if (m_image == null)
        return;

    Dimension d = getSize();
    g.drawImage(m_image, 0, 0, d.width, d.height, Color.white, this);
}
}

```



I have made an applet in VJ++ which I have to sign. Is there any tool to do it (both signing and cabbing)..?

Answer: Signing and archive files are two of the biggest bothers in Java. Everyone uses a different system. A good place to start is:

[http://www.suitable.com/Doc\\_CodeSigning.shtml](http://www.suitable.com/Doc_CodeSigning.shtml)

One of the other bothers is that the unsigned window warning can't be removed by signing an applet for Internet Explorer for Macintosh. And while I am on the subject, the Windows Netscape 4.x system has a bunch of privilege calls:

<http://developer.netscape.com/docs/manuals/signedobj/capsapi.html>

and you need under most circumstances to make Microsoft specific calls too, detailed in links from:

<http://www.microsoft.com/java/security/>

Going through all this will make you want to curse. Unfortunately it is hard to pick a convincing scapegoat. It is true that Microsoft chose an entirely nonstandard CAB system, but it produces archives that are about 40% smaller than JAR files. Signing archive files is a perfect microcosm of the "freedom to innovate" controversy. Microsoft has done a better job but taken away predictability and uniformity. If the Java standards were not controlled entirely by Sun, a Microsoft competitor, perhaps everyone would be using smaller archive files by now.

--

Mickey Segal



Q: Why do I get message like "wrong magic number" when I am trying to run applet? What is a magic number?

Answer: The first thing a JVM does when it loads a class is check that the first four bytes are (in hex) CA FE BA BE. This is the "magic number" and that's why you are getting that error, you are trying to load a file that isn't a class and so the class loader in the JVM is throwing out that exception.

Make sure you transfer the class files to site in binary mode, rather than text or ASCII mode.

An error from the browser saying "cannot start applet ... bad magic number" usually means that one of the class files on the server is corrupted.

Replace your class binary files on the web server; clean up the cache of your browser, and reload your applet.



Q: I want to use more fonts in my applet... say for example Arial... which is not available in the present jdk package...

How can i deal with it?

Answer: `import java.awt.Toolkit;`

....

`Toolkit tools : new Toolkit();`

`String[] fontList = tools.getFontList();`



Q: How can I slow down my applet?

I have a game applet that is running too fast on newer systems that have high-end video cards. Its easy enough to slow down the game by having it sleep between thread cycles, but I need to be able to determine how fast a users machine is before I determine how long to sleep for.

I have been muddling through the documentation but cannot find any calls that will tell my applet what the users configuration is as regards to CPU speed and other components they may have on their system.

Answer: Simple create a new `Date ()`, then perform a standard lengthy operation on the order of something that takes about one second on your machine, like a long loop, then create another new `Date()` and compare it to the first. If it takes 1/2 of the time compared to your machine, then the CPU is probably about 2 times faster. if it takes 3 times the duration compared to your machine, the CPU is probably 1/3 as fast as yours.

Do this dynamically, and it might help with speed changes when there's lots of action happening as well - unless this issue is already being dealt with using threads, that is.

--

by Max Polk



Q: Why do I see applet in applet viewer and do not in a browser?

When I try to view my applet on a web page i get the error

`java.lang.NoSuchMethodError: java/lang/Double: method  
parseDouble(Ljava/lang/String;)D not found`

Which is weird as it compiles fine on Borland and with the JDK using applet viewer  
Anyone have any ideas what is going wrong?

Answer: The `parseDouble` method was only added to Java in JDK 1.2

Browsers typically only support Java 1.1

If you have the JRE installed, you can run Java 1.2 applets. But you must also change the HTML code that embeds the applet. Check [javasoft.com](http://javasoft.com). I believe they have a program which will automatically change the `<APPLET>` tag to `<EMBED>` and add whatever else is needed. It's been a while since I've done applets but I do remember running across a similar problem.



Q: In my applet I have a bunch of gif's in my JAR file. When I try to access a gif using:

`Image img = getImage(getCodeBase(), "image.gif");`

everything works fine under Microsoft Internet Explorer but it does not under Netscape and appletviewer. Of course I do not have any gifs in my CodeBase directory on server.

Any idea why?????


Answer: Because this is not how you access resources in a Jar file. You need to use `getResourceAsStream` if you want to access GIFs from Netscape. Look at:

<http://developer.iplanet.com/docs/technote/java/getresource/getresource.html>  
for example code. This same code will work in Sun's Appletviewer.

--

David Risner

<http://david.risner.org/>

 Q: How do I get JVM version in Internet Explorer?

Q: When you open the Java Console through internet explorer, it prints the following useful line at the top:

Microsoft (R) VM for Java, 5.0 Release 5.0.0.3318

We would like to be able to obtain the above String (or atleast the 5.0.0.3318 part of it) through a Java Applet / Javascript at runtime.

Does anyone know of any handy methods that allow access to this String ? I've looked in all the System.properties, but it wasn't there. Is it stored in the user's registry anywhere ?

Answer: just for Microsoft't VM!


try :

```
class test{
    public static void main(String[] args){
        String build;
        build=com.ms.util.SystemVersionManager.getVMVersion().getProperty ("BuildIncrement");
        System.out.println("Using build "+build);
    }
}
```

Real Gagnon from Quebec, Canada

\* Looking for code code snippets ? Visit Real's How-to

\* <http://www.rgagnon.com/howto.html>

 Q: I wonder if there is a way to find out if a button in an applet has been clicked, no matter which of the buttons in an applet it might be.


Of course I can write, with a particular button (if event.target==button1) but maybe there is a syntax that looks more or less like this (it is an imaginary code just to show what I would like to do) (if.event.target.ComponentType==Button) etc.

I tried a lot of things with getClass but none of them worked

Answer: Have your applet implement the ActionListener interface, and have every button that's instantiated add the applet as an ActionListener. Then, inside of your applet, have the following method:

```
public void actionPerformed(ActionEvent event) {
    // check to see if the source of the event was a button
    if(event.getSource() instanceof Button) {
        // do whatever it is you want to do with buttons...
    }
}
```

Darryl L. Pierce Visit <<http://welcome.to/mcpierce>>

 Q: Could you suggest how to draw one centimeter grid in applet, please? One cm on the screen must be equal to real cm.

Answer: If you're not all that picky about it, you can always use java.awt.Toolkit's getScreenResolution() to see how far between the lines should be in the grid....that's assuming the applet security allows it.

But have it \_exactly\_ one cm, you can't do, since the user can always adjust the display with the monitor controls (making the picture wider/taller/whatever), and no computer that I know of can know those settings.

--

Fredrik Lännergren

Not only that, the OS (and thus Java) does not know if I am using a 21" or a 14" monitor and thus can't know the actual physical size of a given number of pixels. By convention, on Windows monitors are assumed to be either 96dpi or 120dpi (depending on the selection of large or small fonts). Java usually assumes 72dpi. None of these



values is likely to be accurate.

--

Mark Thornton



Q: Does anyone know how to or where I can find information about determining if cookies are disabled on a client browser making a request to a servlet or JSP (or any server side request handler, for that matter)? Also, is there a way to determine whether or not a client's browser has style sheets enabled?

Answer: To test if the client has cookies enabled, create a cookie, send it, and read it back. If you can't read it back, then the client does not accept them. It's not a clean way of doing it, but it's the only way (that I know if).

As for CSS, there is no way to know if they allow CSS. Different versions of the browsers support varying levels of CSS. You can get the browser type from the request object and then make decisions based on that.



Q: How can two applets communicate with each other? Have you some examples?

Answer: You will occasionally need to allow two or more applets on a Web page to communicate with each other. Because the applets all run within the same Java context-that is, they are all in the same virtual machine together-applets can invoke each other's methods. The AppletContext class has methods for locating another applet by name, or retrieving all the applets in the current runtime environment

```
-----  
import java.applet.*;  
import java.awt.*;  
import java.util.*;  
  
// This applet demonstrates the use of the getApplets method to  
// get an enumeration of the current applets.  
  
public class ListApplets extends Applet {  
    public void init() {  
        // Get an enumeration all the applets in the runtime environment  
        Enumeration e = getAppletContext().getApplets();  
        // Create a scrolling list for the applet names  
        List appList = new List();  
        while (e.hasMoreElements()) {  
            // Get the next applet  
            Applet app = (Applet) e.nextElement();  
            // Store the name of the applet's class in the scrolling list  
            appList.addItem(app.getClass().getName());  
        }  
        add(appList);  
    }  
}
```

I hope that did it!  
by 11037803

Here are some useful links on applet to applet communication. I don't know if they will solve your problem but these are a variety of good approaches for this type of issue.

<http://www.javaworld.com/javaworld/javatips/jw-javatip101.html>  
<http://www.twf.ro/calculatoare/TricksJavaProgramGurus/ch1.htm>  
<http://www.galasoft-lb.ch/myjava/CommTest/backup00/>  
<http://www.rgagnon.com/javadetails/java-0181.html>  
<http://www.2nu.com/Doug/FAQs/InterframeIAC.html>  
by Mickey Segal



Q: I would like to ask if there 's anyway that I can use the same program run as an applet or application?

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

Answer: You would have to provide at least a main() for the application part, and init(), start(), stop(), destroy() for the applet part of your program. Your class could simply display the applet within a Frame.

Example:

```
class Foo extends Frame {
    public Foo(String title){
        //...
        Foo applet = new Foo();
        applet.start();
        add(applet, "Center");
        //...
    }
}
```

main() is function of course, not constructor

--

Alex



Q: Is it possible to run a java applet in a dos window (win98 se)?

Answer: No. A dos window is a character device. You can use the applet viewer program that comes with the JDK though.

--

Mike



Q: Is there a simple way to tell if a PC online or not from within an applet?

Answer: Not without either server-side support or signing the applet, since applets are not allowed to connect to other hosts than the one they are downloaded from. Best approach, I suppose, would be to ping the target from the server.

However, this is not quite full proof because of firewalling: my pc, for example, will not answer to pings.

--

Michiel



Q: Is it possible to close browser from applet?

Answer: Yes, use this (tested):

```
////////////////////////////////////
```

```
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
import netscape.javascript.JSObject;
```

```
class CloseApplet extends Applet
implements ActionListener{
    protected Button closeButton = null;
    protected JSObject win = null;

    public void init(){
        this.win = JSObject.getWindow(this);
        this.closeButton = new Button("Close Browser Window");
        this.add(this.closeButton);
        this.closeButton.addActionListener(this);
    } // ends init(void)

    public void actionPerformed(ActionEvent ae){
        this.win.eval("self.close()");
    }
}
```

```
} // ends class CloseApplet
////////////////////////////////////
```

and the HTML needs to have MAYSCRIPT enabled.

```
////////////////////////////////////
<HTML>

<HEAD>
<TITLE>Integre Technical Publishing</TITLE>
</HEAD>

<BODY BGCOLOR="#FFFFFF">
<DIV ALIGN="CENTER">
<APPLET WIDTH="150" HEIGHT="30" CODE="CloseApplet.class"
  CODEBASE="java/" MAYSCRIPT>
</APPLET>
</DIV>
</BODY>

</HTML>
////////////////////////////////////
```

Here's the API:

<http://home.netscape.com/eng/mozilla/3.0/handbook/plugins/doc/Package-netscape.javascript.html>

It's small enough that you could include it in your JAR if you'd like. But most users will even have it on their systems.

It says "Netscape," but I know that IE understands it fine.

--

Greg Faron  
Integre Technical Publishing



Q: Is it possible to run an Applet inside a JAVA application?

Answer: An applet is just another class that can be instantiated:

```
Applet myApplet = new MyApplet();
```

where MyApplet is the name of the applet class that you have written and then added to a container of some kind

```
myFrame.add(myApplet);
```

..but you need explicitly call the init() method that a browser would normally call "behind the scenes":

```
myApplet.init();
```

--

artntek

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version 5.2

Hello dear friend!

I am very glad that you are here!

I BET that MOST of Java programmers CAN NOT ANSWER my SIMPLE QUESTION:

Question: What is output you will see running this small (almost "Hello World") program by command:

java test \* // Do not forget to type \* symbol after words "java test" !!!!

Code:

```
class test{
    public static void main(String args[]){
        for (int i = 0; i < args.length; i++) {
            System.out.println("File " + i + ":" + args[i]);
        }
        if (args.length<=0) {
            System.out.println("No files!");
        }
    }
}
```



}

Probably you can assume something now... But can you explain exactly?

**Answer:** This program will list all files in current directory (where you are running program from)!!!

**Unbelievable !**

And even hidden files in UNIX if you run it like this:

```
java test . *
```

You can ask me and yourself:

How can we get this list without any file handling functionality in the code?

Indeed looks mysterious... Do not believe?

Try! Always try when you do not believe or do not know....

It took only **105 seconds** for me to copy the code from the page, compile and run the example.

If you can not answer my simple question... Can you answer more difficult questions? Do you really know the Java?

The **simple answer to simple question** you can find in my eBook "500 Java Tips!"



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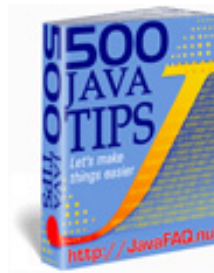
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## Databases & beans



Q: Anybody does know a freeware JDBC driver for a dsn-less connection to MS SQL-Server? Would even consider a "cheapware" version.

Answer: Go to <http://industry.java.sun.com/products/jdbc/drivers> and search for Microsoft SQL Server. Any Type4 (i.e. pure Java) driver should work without a DSN.

The only free one I'm aware of is at <http://www.freetds.org> - but it is rather limited in what it can do. You'd need to try it out to see whether it fits your requirements.

--

Stefan

P.S. DSN - Data Source Name



Q: I just want to know which programs and virtual machines you have to have to make and run enterprise java beans...

Answer: To compile and run Enterprise JavaBeans, you need a couple of things.

First, you need the J2EE SDK. This kit includes APIs full of packages which are considered extensions to the standard Java language APIs, as well as other tools, which come with the J2SE SDK, which you should already have. Install the SDK and make sure its jar file is in your development environment's classpath.

Second, you need a container, which in this case you can also refer to as an application server, though technically a container is just one part of the server. The container acts as a liaison between the client object and the Enterprise JavaBean. When you talk to an Enterprise JavaBean, you actually talk to a proxy (a substitute), and the proxy, which knows how to do networking stuff, talks to the container, which in turn talks to the actual implementation object which is what you think of when you think of an Enterprise JavaBean.

The J2EE SDK, fortunately, comes with a server/container, as well as a GUI-based tool which allows you to deploy your Enterprise JavaBeans in the server. See [java.sun.com/j2ee](http://java.sun.com/j2ee).

Third, you need a lot of patience. The learning curve is rather steep unless you have a lot of experience doing network programming. Enterprise JavaBeans are designed to abstract out networking and storage logic, which ends up

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being very helpful, but is confusing at first, because so much happens behind the scenes that is not explicitly controlled by your code. For example, when you deal with a single Enterprise JavaBean, at least five different objects are actually being instantiated!

But it's great once you get past the initial learning stage, which can last a while. There are lots of good books on EJB, but I found Ed Roman's "Mastering Enterprise JavaBeans" to be a great primer.

--

Erik

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## Distributed systems

 Q: Has anyone ever tried anything like this or am I asking for trouble trying to write a program like this?.... I plan to use JBuilder to create a Java GUI that will use Perl to invoke system calls. The GUI will be run in Windows(NT) while the system calls will be invoked in Unix.

Answer: Sure, why not? Seems to me it should be quite doable. Use Java code to build the GUI and cross the network (for instance using RMI), then invoke the Perl interpreter as an external process, or possibly use JPerl (see <http://www.perl.com/CPAN-local/authors/id/S/SB/SBALA/>) from there. Or use a different distributed objects architecture to connect Java and Perl objects over the network...

## About serialization...

If I have a class that implements the Serializable interface, but it has member variables which reference objects that do not implement the Serializable interface, it appears that I can't serialize an instance of the class. I keep getting:

```
java.io.NotSerializableException
```

for one of the objects referenced by a member variable.

Am I correct, or am I just missing something. Also, if anyone knows a work-around to serialize non-serializable objects, I'd like to hear about it. Unfortunately, I have no control over the classes I'm trying to serialize, so I tried putting a serializable wrapper around them , but that didn't work.

Answer: Do you really need to serialize those members of your class which aren't serializable? In other words, make them private:

```
class Foo implements Serializable {  
    private Bar bar;  
}
```

Do you \*need\* to maintain the state of the 'bar' variable when serializing/deserializing Foo? If not, simply declare 'bar' as 'transient' and it will be ignored during serialization.



## RMI versus Socket communication

I wish to get Java talking to C++ across a network.

Does anyone have any thoughts in terms of performance, ease of development etc.

in :

Wrapping the C++ side with JNI and using RMI for the communications.

versus

Writing sockets code and communicating via http?

Answer: It depends of what kind of application you're writing but I think about the following :

- with RMI you can have remote REFERENCE instead of having to transfer all the object through the network. The object has just to implement Remote. So it spare bandwidth and is good for performance. This is impossible to do if you do through a socket connection, you've to send the all object.
  - You've not to take in charge the serialization (which could be not so easy depending of your object structure), neither the connections, etc... All of that is taken in charge by RMI.
  - the performance are GOOD (even a bit more than that)
- three good points to use RMI, isn't it?

The difficulty added by RMI is the configuration of both client and server (distribution of stubs, rmiregistry, what's happen if firewall). Depending of the environment all of that can be either easy or complicate. But once that all of that is in place you can extend your application easily, so it's much more flexible and scalable.

If your needs are small perhaps that you could do your own connection system (but for me it's less scalable and more bandwidth consuming and so less performant).

--

François Malgrève

Answer2: I have done both. If your communication scenarios are diverse and could keep changing, using a remote technology like RMI can help. If the operations are few and/or not likely to change you can save the JNI complexity. Not that it is really hard it just can be fun keeping the JNI code in sync with the C++ code.

--

Bret Hansen



Q: I need to communicate some data (string) from a Java Applet to an other ASP page in the same frameset. I would like to avoid a server roundtrip and do it all with JavaScript if possible.

Therefore I would like to call some javascript from a Java Applet. It looks like it is not possible without a netscape package. Is that true? Is there a simple implementation of the same functionality (source code) which I could incorporate in my applet?

Answer: Those Netscape packages are part of the current VM of both Microsoft IE 4+ and Netscape 4+. So, by adding the MAYSCRIPT tag to your Applet declaration, in the Java code you can obtain a handle to the document and call functions in it.

by Tom Hall



Q: I'm researching methods by which one JVM can interact with another JVM, which is running on the same machine.

I know that there are various network models, which can be applied if a JVM needs to talk to another one across a network, but in addition to these (which could I guess be applied to JVMs on the same machine) I wondered if you knew of a system of JVM communication that requires less system resources, where the JVMs are both running on the same system.

Answer: CORBA, RMI, HTTP, sockets....

But if you have no TCP/IP stack on your platform, so for Windows it could be clipboard...

--

by dmitry



Q: I have a question about sending a reference to the object via the socket...

I have a question about sending a reference to the object via the socket. Two threads are communicating via sockets running on the same machine. I don't need to send the whole object, but I need to send just a reference.

Does anyone knows how to do that?

Answer: Reference to an Object? A reference is only valid within the same memory space! If you want to be able to invoke methods on an object remotely, then you will need to use a remote technology like RMI, CORBA, or some such.

--

by Bret Hansen

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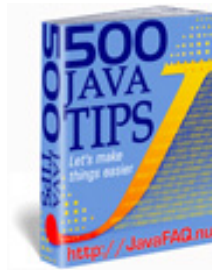
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## File Systems I

 How does Java read the text files? Can Java read the files that are in other formats? Is the read file method in Java only recognizes the file in .txt or other text format?


Answer: Java can read any text file ( using a `java.io.FileReader` for example ), the attribute at the end is an indicator and thus is not relevant as long as the actual code read is in the correct format. It can read files that are in other formats bytes etc and if you have a wierd format you could extend the IO mechanism with some work to work with that.

 Q: Is it possible to choose a directory path instead of a file path in a swing FileChooser dialog box?

Answer: Assume you have instance chooser of type `JFileChooser`, invoke...  
`chooser.setFileSelectionMode(JFileChooser.DIRECTORIES_ONLY);`


 Q: Does anyone know the way to retrieve the path from where has been loaded the main class of an application, not the path from where has been launched the virtual machine?

Answer: Please use something like this:  
`path = System.getProperty("user.dir");`

 Q: How to erase the content of (text) file without create/open file again (only do "new FileOutputStream(...)" once)?

Answer: Try `java.io.RandomAccessFile.setLength(0)` if you're using JDK 1.2 or higher.

If you don't have to keep the file, it may be easier to use  
`java.io.File.delete()`.

 Q: When creating a new file, is it possible to control whether or not an existing file with the same name is/is not overwritten? I haven't been able to answer this by looking at the java.io api

Answer: There is a method in File to atomically create a new file which will fail if the file exists... You can use this to try creating the file, and if it exists already don't ever open the FileOutputStream to write contents.

 Q: Do exist Compound Files in Java?

Microsoft has made an API where you can have a whole "virtual" filesystem inside a single file on the real filesystem. I think they call it Compound Files - I have also heard about the concept under the name of Structured Storage.


Do any of you know if something like that exists in a Java-library? I have to work for all platforms! (It can of cause be implemented with the use of Compound Files in its Windows implementation)

Answer: jar files are essentially the same.


Have a look at java.util.jar.JarFile

--

by Bret Hansen

 Q: Is it possible to redirect the System.out.println to a file?

Answer: Connect a PrintStream to the file, and then call System.setOut (PrintStream out) that reassigns the "standard" output stream.

 Q: Could some kind person please tell me how to save the object as a file so as the same program can load it again?

Answer: try this program. It saves object into file:

```
import java.io.File;
import java.io.FileOutputStream;
import java.io.ObjectOutputStream;
import java.io.IOException;

public class Save{
    public void saveMyObject(String filename, Object obj) {
        File myFile = new File(filename);
        try {
            FileOutputStream fileOutStr = new FileOutputStream(myFile);
            ObjectOutputStream outStr = new ObjectOutputStream(fileOutStr);
            outStr.writeObject(obj);
            outStr.close();
        }catch (IOException e){
            System.out.println("?!!!!!!");
        }
    }
    public static void main (String args[]) {
        Save s = new Save();
        Object myObject = new Object();
        String test = "test";
        myObject = (Object)test;
        s.saveMyObject("myfile", myObject);
    }
}
```

If you open myfile you will see that this object includes our string "test"  
In the same manner you can read this object from file...



Q: Can anyone write me a short method that lets me know what files are in a particular directory?

For example, I want to know that directory, d:/temp/aaa, has files a.txt, b.java, b.class.  
Also related to this, how do I find out what folders I have?

Thanks in advance.

Answer: use our program as a base and add checking for the files and directories you need to find!

here it is:

```
import java.io.File;
public class Save{
    public void showDirectoryList() {
        File dir = new File("d:/temp/aaa");
        File[] list = dir.listFiles();
        for (int i=0; i<list.length; i++) {
            if (list[i].isFile()) {
                System.out.println("File "+list[i].getName());
            } else if (list[i].isDirectory()) {
                System.out.println("Directory "+list[i].getName());
            }
        }
    }
    public static void main (String args[]) {
        Save s = new Save();
        s.showDirectoryList();
    }
}
```

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## File Systems II

 Q: How do I delete a file in Java? I have programmed a Java application that needs to delete a file, but I couldn't find anything on the topic.

Answer: in `java.io.File` there is `delete`  
`public boolean delete()`

Deletes the file or directory denoted by this abstract pathname. If this pathname denotes a directory, then the directory must be empty in order to be deleted. Create a new `File` object representing the file, and then use the `delete ()` method. If you use the Microsoft JVM, make sure the file is not shared before you delete it, otherwise that will not work (the `delete ()` method returns "false").

 Q: I need to read `C:\test.doc` for example and store it somewhere for my future use. I don't know anything about security. Part 1

Answer: If you want to read a file on the local file system in an applet, you are going to digitally sign the applet, and the user of the applet is going to indicate trust in the signature. How you go about this depends on a number of questions, like:

In which browser(s) will the users be running the applet?

Will a Java plug-in be installed in the browser?

Can the user install a plug-in?

Here are a few tips on some of the sticky points of signing applets...

-----  
If you are using the jar signing tools that come with the JDK, you'll find that they will only work with the Java plug-in. Netscape and Microsoft IE don't salute the Sun way of signing applets.

If you can rely on your users to install the Java plug in, you can sign applets using the JDK 1.1.X `javakey` command. You will also have to have them import your certificate into their 'identitydb.obj' file in their home

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directory, and mark it as trusted. If importing the certificate is too much to ask, and it usually is, you could create an 'identitydb.obj' containing the certificate, already marked as trusted, and have them download this to their home directory. Be careful not to distribute the 'identitydb.obj' that you used to sign the jar, since that would allow anyone to sign code as you!

JDK1.2.X works in a similar way, but the 'jvakey' command has been replaced by 'jarsigner' and 'keytool'. In addition, 1.2 adds granularity to the security model, so that you can assign privileges outside of the sandbox via a policy file. For example you could allow an applet to read files, but not write them. JDK 1.1.X security is kind of an all or nothing proposition.

If you can't count on the Plugin being there, but you know your users will be using Netscape, you can sign use the Netscape signtool. Netscape's signtool is a little different than Sun's. With Netscape's, you put all of your class files into a directory, like signdir, and then run something like this:

```
./signtool -k MyCert -Z MyApplet.jar signdir
```

The 'MyApplet.jar' file will be created, and, of course, you would already have to have MyCert in your security database. You can generate a test certificate through signtool, but it's only good for a couple of months.

--

Joe Morrogh - Excite@Home - The Leader in Broadband <http://home.com/faster>



Q: I need to read C:\test.doc for example and store it somewhere for my future use. I don't know anything about security. Part 2, Part 1 was published yesterday

Answer 2: I think they want you to go out and buy a cert from Verisign or Thawte, etc. You can also generate your own signing certificate through openSSL, or some other package, but, if you do, you'll need to have them import it into their database as a trusted signer. This can be done with a simple Perl script which sends the certificate with a header of:

```
"Content-Type: application/x-x509-ca-cert"
```

You must also add some code to your applet to use the Netscape way of signing. You can download the file 'capsapi\_classes.zip' from Netscape. This file contains the Netscape Capabilities API. Basically, all you need to do is import the package and enable privileges as you need them. It is important to enable privileges in the same method (ie. same frame stack)

in which you are going to use them. You cannot just enable all the privileges you need in the init method of your applet. The code looks something like this:

```
import netscape.security.*;
public void MyMethod() {

    try {
        PrivilegeManager.enablePrivilege("UniversalFileRead");
        FileInputStream fis = new FileInputStream("myfile");
    } catch (Exception e) {
        System.out.println(e);
    }
}
// end MyMethod
```

You'll need to add 'capsapi\_classes.zip' to the archive attribute of your applet tag. I also believe it is possible to grant privileges to a codebase in Netscape without signing. This is done by editing the 'prefs.js' file on the client. Obviously, this is not possible on the internet, but, for an intranet environment, this could be a solution. Anyway, when an applet tries to enable a privilege, the Netscape browser will pop up a window asking the user if they wish to grant the privilege. This decision can be persistent.

The user can manage the privileges they have granted by clicking on the padlock icon in the bottom left corner of their browser window, and selecting the "Java/JavaScript" section.

If your users may be using Microsoft IE as well as Netscape, you'll have to learn the Microsoft security API. I haven't done this yet, but I believe it is possible to code an applet so that it will work in either browser.

Another alternative is to code different versions of the applet, and build the page containing the applet dynamically, based on the "User-Agent". I have found that it is possible in IE to grant universal privileges to an applet, even if it is not signed, but I sure wouldn't recommend doing that.

--

Joe Morrogh - Excite@Home - The Leader in Broadband <http://home.com/faster>



Q: Is there any method like writeLine()?



Answer: For writing text to files, you can use a `FileWriter`; for binary data, use a `FileOutputStream`. Both are in the `java.io` package. Have a look in the docs, all you need is there. Oh, you might want to wrap your `writer/outputstream` in a buffered one for more efficiency. Something like this:

```
FileWriter fw = new FileWriter("D:\\temp\\test.txt");
BufferedWriter bw = new BufferedWriter(fw);
bw.write("Some text on the first line");
bw.newLine(); // have the Writer insert the newline
bw.write("Some more text, followed by an explicit newline\\n");
bw.close();
```

Note, that while `\\n` will probably work, `newLine()` inserts the platform's own line separator (ie, `\\r` on Mac, `\\r\\n` on Windows, `\\n` on \*nix).

--

Michiel



Q: I want to copy a set of gif files from one directory to another. If I use any of the File Reader/Write classes of `java.io.package`, gif files are being copied but are distorted.

Most probably because Java reads in character mode. So, how can I copy gifs ?

Answer: use `FileInputStream` `FileOutputStream` instead.



Q: Is there a newsgroup on how to use Java for CDs? I mean not CD that install something but CDs that you browse.

Answer: Strictly speaking, there is no difference between "CDs that install something" and "CDs that you browse". All CDs contain the same file structure. It's up to the operating system to decide what it does with those files. Windows includes functionality to start a special file on the CD automatically, typically to install something. You read them just as you would any other disk files. To create them, usually you provide a list of files to a creator program.

--

Joona Palaste

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## Graphics, AWT, Swing

### How can I minimise "Flicker" in animation? Solution 1:

Answer: Solution 1:

Override update() : Flickering in animation occurs because default update() method clears the screen of any existing contents and then calls paint(). To reduce flickering, therefore, override update(). Here is how just add the following code to your applet:

```
public void update(Graphics g) {  
    paint(g);  
}
```

What the update is now doing is just calling paint() and not clearing it, a further refinement to the above will be to override update() method and painting only the region where the changes are taking place. Here is how:

```
public void update(Graphics g) {  
    g.clipRect(x, y, w, h);  
    paint(g);  
}
```

Solution 2 will be described tomorrow

### How can I minimise "Flicker" in animation? Solution 2:

Solution 1 was described in our tip yesterday

Solution 2:

Use double-buffering : double buffering is the process of doing all your drawing to an offscreen and then displaying the entire screen at once. It is called double buffering because there are two drawing buffers and you switch between them. Use double buffering only if the above solution alone does not work. The following code snippet describes how to do it.

```

Image offscreenImage;
Graphics offscreenGraphics;
offscreenImage = createImage(size().width, size().height);
offscreenGraphics = offscreenImage.getGraphics();
offscreenGraphics.drawImage(img, 10, 10, this);
g.drawImage(offscreenImage, 0, 0, this);

```



The following app works fine, but when I start it, I cannot close it using the X at the right top of the form...

Please help me on the following. I'm just starting to use java (JDK1.3). The following app works fine, but when I start it, I cannot close it using the X at the right top of the form. What should I add to fix this problem? The source is shown below.

```

import java.awt.*;
import java.awt.event.*;

public class MyApplication extends Frame{
    public static void main(String args[]){
        Frame f = new Frame("MyApp");
        f.setLayout(new FlowLayout());
        f.add(new Button("A"));
        f.setVisible(true);
    }
}

```

Answer: You should add a listener to handle the closing of the window when the X box gets clicked on.

```

f.addWindowListener(new WindowAdapter(){
    public void windowClosing(WindowEvent evt){
        System.exit(0);
    }
});

```

Read on this, and other ways to do it, in the sections dealing with event handling, in whichever Java text you are using.



How can I set a JFrame to be full screen at the start of a program? I want no borders, no titles and I just want to use the entire screen.

Answer: Try using JWindow instead, that one can be customized to have no borders or titles... as for size, I think you can use `setBounds(GraphicsEnvironment.getLocalGraphicsEnvironment().`

```

getDefaultScreenDevice().getDefaultConfiguration().getBounds());

```

to fill out the entire screen.



Why can not I mix AWT and Swing?

Recently, I have been hearing a lot of people from various newsgroups and website saying, java swing and awt can't be in the same application. They will not work together and they might produce unexpected results. At the same time, i don't hear people saying "why" you shouldn't use swing and awt together. Could someone out there shed some light for me. Is their any logical reason why we shouldn't mix swing and awt in the same application/applet. If there is a problem mixing swing and awt... what are the results, what can happen? I design using IBM's Visual Age for Java 3.0, and I mix swing and awt in the same application/applet, it works fine when testing in the IDE (I haven't tested it outside of the IDE yet). If you have tested application/applets outside of the IDE, please let me know what happened?

Answer: There are fundamental incompatibilities in the way they draw themselves.

AWT java classes are not "pure" Java classes, they use underlying C/C++ native code (dependable on operation system) that can cause different appearance in different OSs.

Swing is pure Java implementation and has no native code at all. Swing applications look the same.

> If there is a problem mixing swing and awt... what are the results,  
> what can happen?

Some objects drawn on top of others are not properly occluded. This is most obvious with drop down menus, which have a tendency to stay visible even after you have selected a menu item. Another problem is that if you use AWT components on a JTabbedPane they will not disappear when you switch tabs. There are many similar issues.



Again about difference between AWT and Swing

I have a question: What are the architectural differences between Swing and AWT??

Answer: by Odd Vinje

There are no big architectural differences, the class hierarchy is almost the same. The reason is that Swing is built upon AWT.

The most significant difference is how the components are drawn to the screen. AWT is so called heavyweight components and have their own viewport which sends the output to the screen. Swing is lightweight components and does not write itself to the screen, but redirect it to the component it builds on. Heavyweight components also have their own z-ordering. This is the reason why you can't combine AWT and Swing in the same container. If you do, AWT will always be drawn on top of the Swing components.

You can combine AWT and Swing, just don't do it in the same container (e.g. panel, groupbox, etc.) and don't put a heavyweight component inside a lightweight.

Another difference is that Swing is pure Java, and therefore platform independent. Swing looks identically on all platforms, while AWT looks different on different platforms.



Swing is "lightweight" components. Its graphics primitives are implemented in 100% Pure Java. How does it draw pixels on screen?

Does it still rely on any native code to access the frame buffer?

Answer: We mentioned before in our tips that Swing components is 100% pure Java.

It isn't fully correct if we are speaking about containers on which they can draw. Swing is still based on AWT, and even Swing components must have at least one heavyweight container. In other words, JFrame, JApplet are \*not\* lightweight.



I need to put in a JTextField characters like cyrilic ...

How can I do this?

Answer: You use the unicode string \u???? corresponding to your character.

A table of codes can be found at [www.unicode.org/charts/](http://www.unicode.org/charts/)

by Charles Megnin



Is there any way to accept password from a java application. As it is a password, IT SHOULD NOT BE SHOWN(ECHOED) WHILE IT IS ENTERED.

Answer: If you are using swing, you can use JPasswordField, and set your echo character.

by myparu



How can I change the default icon on application window (java cup) to my own?

Answer:

```
window.setIconImage(Toolkit.getDefaultToolkit().getImage("image.gif"));
```



Q: How can I read a Tab delimited text file into a JList?

All I need is the first item in each record. I import each line with a `BufferedReader.Readline()` and then look at each char with `record.substring(n,n+1)`. How can I check if the next char is a Tab?

```
Answer: StringTokenizer st = new StringTokenizer(record, "\t");
while (st.hasMoreTokens()) {
    String token = st.nextToken();
    // ... do something with the token
}
```



How do I generate mouse click event but without a real click?

Could you tell me how I can generate an event (like a mouse click) from a Java application? (I want generate a mouse click event but without a real click on the mouse).

Answer: See "simulate keyboard pressing" below: You can use `java.awt.Robot` since java1.3



Q: Why would anyone use AWT and not Swing today?

Answer: There are several handheld devices that do not have a lot of memory or CPU power available, AWT is more suitable for them (Smaller footprint).



Q: Need I to remove all the listeners on all of the components in the Frame when I close window of the Frame?

I've got a Frame, which has in it a bunch of components, some of which themselves may be containers. Many of the components in this frame have listeners.

When somebody closes the window of the Frame, I want to completely get rid of the Frame, so that the garbage collector will later clean it up, freeing it's memory. However, I haven't yet figured out a way to do this without tracking every single component by myself. Just calling `dispose()` on the main Frame doesn't seem to be good enough. Calling "`RemoveAll()`", even recursively, doesn't seem to be good enough.

I \*suspect\* that the problem may be that I have to remove all the listeners on all of the components in the Frame. Is there a way to get a list of the listeners out of a given component? I really don't want to have to track every single button I add to every single Frame, and every single Listener I add to every single component. If I have to keep track of all of that, it sort of defeats a lot of the advantages of a well-defined object oriented system.

Answer: I think you're slightly confused here. When another object registers as a listener for a component within the frame, it's the component within the frame that is holding a reference to the external object in its listeners list - not vice versa.

Which means you don't really need to explicitly remove every listener that any other object registered on components in the frame.

What you need to worry about is however the listeners that the frame itself registered with some other components that are still alive. If the frame gets disposed without removing these, the objects that were being listened to will retain a reference to the frame and this can cause the frame to stay around as long as these objects which hold these references stay alive.

So look for all Listeners that your frame registered itself as on components external to itself (should be fairly easy to see since you normally do it in your constructor) and remove those before disposing off the frame.

--

Kala



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## Graphics, AWT, Swing

 Q: I'm resetting the TitleBorder's title via setTitle, but no change occurs....

I'm trying to make a dialog box containing a panel whose TitleBorder's text dynamically reflects the function of the list box within it. The title text and the list box contents should change according to the buttons pressed elsewhere in the dialog box. I'm resetting the TitleBorder's title via setTitle, but no change occurs. Do I need to update the dialog? If so, how do I do this?

Answer: Yes, you need to update the dialog.  
How? Call the validate() and invalidate () methods


 Q: everytime you create a dialog-object, the dialog pops up in the upper left corner of the screen. Now I want it to be automatically placed in the center of the application's frame.

Answer: private void center() {  
    Dimension screenDim = Toolkit.getDefaultToolkit().getScreenSize();  
    setLocation( ( ( screenDim.width - getSize().width ) / 2 ),  
        ( ( screenDim.height - getSize().height ) / 2 ) );  
}

You can call this anytime after calling pack() on the JDialog, before setVisible().

--

Dave Neuendorf

 Q: How can i disable the right click on the label?

I have a JTree and a JPopup: i've forced the code to be able to select the node with a right click and show the popup. The problem is that i can right click on the popup labels to select them, but i'd like to select them only with a left click. How can i disable the right click on the label? Can somebody help me please?

Answer: You can add in an if loop that only executes if the left mouse button is down using code like the following:

```
MouseEvent e;  
if ((e.getModifiers() & e.BUTTON1_MASK) != 0)  
{ // code for left button click }
```

and just so you know,  
InputEvent.BUTTON2\_MASK is the middle or scroller button  
InputEvent.BUTTON3\_MASK is the right button in windows

--  
by MSW



Q: How do I count the width in pixels of the text before drawing them into graphics?

I have the Font and the String and I am using them in an applet:

```
graphics.setFont(font);  
graphics.drawString(str);
```

How do I count the width in pixels of the text before drawing them into graphics?

Answer: `import java.awt.*;`

```
Toolkit tk = java.awt.Toolkit.getDefaultToolkit();  
FontMetrics fm = tk.getFontMetrics(new Font("Arial", Font.PLAIN, 10));  
int width = fm.stringWidth("Your String");  
--  
Jarkko
```



Q: If I do (CustomFrame extends Frame) smth. like this:

```
Frame newFrame = new CustomFrame();
```

what are the advantages of doing this over:

```
CustomFrame newFrame = new CustomFrame();
```

Answer:  
There is one difference.

If the reference is a Frame type you can always downcast it, but not if it is a CustomFrame type.

Might be nice sometimes.

--  
Soren ' Disky ' Reinke



Q: I want to know what is the difference between JScrollPane and JScrollBar...is both same or not..?

Answer: No. A JScrollPane is a container for components which can grow larger than the visible area that can be displayed (i.e., a JTable or a JTree, for example). When you place a component like these into a JScrollPane then the visible area is displayed and appropriate scrollbars presented to allow scrolling to non-visible areas.

A JScrollBar is just that, a scroll bar.

Read the Java docs for both classes and the differences should be most apparent.

--  
Darryl L. <http://welcome.to/mcpierce>



Q: Is it possible to change delays that affect appearing, keeping and disappearing of tooltip?

Answer: It was difficult to find the answer but finally I found in "Swing" book that is free to you on our site. The TooltipManager is a service class that maintains a shared instance registered with AppContext. We can access the TooltipManager directly by calling its static sharedInstance() method:

```
TooltipManager tooltipManager = TooltipManager.sharedInstance();
```

Internally this class uses three non-repeating Timers with delay times defaulting to 750, 500, and 4000. TooltipManager uses these Timer's in coordination with mouse listeners to determine if and when to display a JToolTip with a component's specified tooltip text. When the mouse enters a component's bounds TooltipManager

will detect this and wait 750ms until displaying a JToolTip for that component. This is referred to as the initial delay time.

A JToolTip will stay visible for 4000ms or until we move the mouse outside of that component's bounds, whichever comes first. This is referred to as the dismiss delay time. The 500ms Timer represents the reshow delay time which specifies how soon the JToolTip we have just seen will appear again when this component is re-entered.

Each of these delay times can be set using TooltipManager's setDismissDelay(), setInitialDelay(), and setReshowDelay() methods.

TooltipManager is a very nice service to have implemented for us, but it does have significant limitations. When we construct our polygonal buttons we will find that it is not robust enough to support non-rectangular components. It is also the case that JToolTips are only designed to allow a single line of text.



Q: How can I test if a JTextField is empty. My code is below but does not work.

```
if (myJTextField.getText() == " ")
    return true;
else
    return false;
```

Answer: You have to compare String content, not String handler...so you have to use the equals() method.  
For example:

```
if (myJTextField.getText().equals(""))
    return true;
else
    return false;
Or
you can test whether text == null,
then check if myJTextField.getText().length() == 0
if it is not, do text=text.trim() to remove spaces,
then check text.equals("") to see if it is an empty String
--
```

Lucio Benfante, Arnaud Berger and Jorge Jordao



Q: Whats the difference between a Frame and a canvas? Can someone tell me the difference?

Answer:

A Frame is , well , a frame - a window, with borders,close/minimize/maximize buttons (usually), and can not contain other elements, such as a menubar ,buttons panels, etc.

a Canvas is a user interface element (which you can place in e.g. a frame) onto which you can draw/display something..

--

by Nils O. Selåsdaal



Q: I know how to make a text box using Visual Basic that can only accept certain keys for example if I wanted to make a box where you can type only numbers in it or letters. However, when it comes to Java I have not been able to figure this out. Is there a way to do this and make a textbox where you can only type letters in it?

Answer: First of all, 'ASCII' is not a synonym for 'text'. ASCII is just one of many ways of encoding text to numeric values. It is 7-bit and only includes values from 0 through 127.

Now, on to your question. With ASCII, 'numbers' and 'letters' are a little easier to check, since the only letters are 'A'-'Z' and 'a'-'z'. However, Java uses Unicode and has all sorts of fun extra characters.

But you do have a few handy methods on the `java.lang.Character` class such as `isDigit` and `isLetter`

Now, if you are using swing, then to achieve what I'm guessing you want is quite simple. Just hook a custom text document to the `JTextField` you're using and have it do the filtering.

\*\* Here's the part of The Java Tutorial that goes over it

<http://java.sun.com/docs/books/tutorial/uiswing/components/textfield.html#validation>

Here's someone's Swing FAQ on that

[http://users.vnet.net/wwake/swing/faq.html#text\\_check](http://users.vnet.net/wwake/swing/faq.html#text_check)

Here's a JavaWorld article that describes how to do that to limit the length of input. Shouldn't be too hard for you to change to your specific needs.

[http://www.javaworld.com/javaworld/javaqa/2000-05/02-qa-0512-textbox\\_p.html](http://www.javaworld.com/javaworld/javaqa/2000-05/02-qa-0512-textbox_p.html)

All these links were from the first page of a search on <http://www.google.com>  
Google is your friend!

--

John A.Cruz



Q: How can I force Java not to draw the background?

I have the following problem: I display a .gif image on a panel with the `g.drawImage()` method. If I now display the image of a car on a track then the background of the image (black) gets displayed, too.

How can I force java not to draw the background?

I tried the `setXORMode(Color col)` method which filters the given color out but this ruins my image.

Answer: Just make your GIF image have a transparent background. Java already handles drawing GIFs with transparency. The black color in your car image is not the transparency color of your image.

--

dalal



Q: I was wondering how to create a Directory Dialog, just like the `FileDialog` class, but for selecting directories instead of files.

I'm sure this has been done, and I apologize if it is in a FAQ. Just point me in a direction, and I will go. Swing or AWT is fine.

Answer: In Swing, you can use `JFileChooser` and set it up to choose a directory. See the API docs for details.

--

Chris Smith



Q: Can any one please tell me whether I can create a Window/JFrame in Java that is not rectangular in shape?

If the answer is yes, then where can I get the information to do that?

Answer: Unfortunately answer is "No"...



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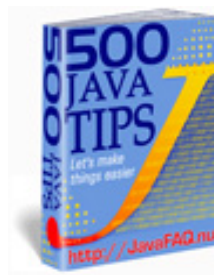
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## General Java Questions I


 Q: Is JavaScript the same as Java?

Answer: NO! An Amazingly large number of people, including many web designers, don't understand the difference between Java and JavaScript. Briefly it can be summed up as follows:

Java was developed by Sun Microsystems. Java is a full-fledged object-oriented programming language. It can be used to create standalone applications and applet. Applets are downloaded as separate files to your browser alongside an HTML document, and provide an infinite variety of added functionality to the Web site you are visiting. The displayed results of applets can appear to be embedded in an HTML page (e.g., the scrolling banner message that is so common on Java-enhanced sites), but the Java code arrives as a separate file.

JavaScript on the other hand was developed by Netscape, is a smaller and simpler scripting language that does not create applets or standalone applications. In its most common form today, JavaScript resides inside HTML documents, and can provide levels of interactivity far beyond typically flat HTML pages -- without the need for server-based CGI (Common Gateway Interface) programs.

Some server software, such as Netscape's SuiteSpot, lets web application developers write CGI programs in a server-side version of JavaScript. Both client-side and server-side JavaScript share the same core JavaScript language, but each side deals with different kinds of objects. Client-side objects are predominantly the components of an HTML web page (e.g., forms, text boxes, buttons). Server-side objects are those that facilitate the handling of requests that come from clients, as well as connectivity to databases.

 Q: Is Java open source as distributed by Sun, i.e., all the modules including JVMs?

If not, is anyone else doing an open source implementation?

Answer: Java is not open source project. Though you can get the full source code under a Sun license.

<http://kaffe.org> does open source implementation.

I read there: "Kaffe is a cleanroom, open source implementation of a Java virtual machine and class libraries. It is also a fun project that was started by Tim Wilkinson and was made successful by the contributions of

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numerous people from all over the world.

But Kaffe is not finished yet! You can help by developing new and missing functionality, porting Kaffe to new platforms, and testing your Java applications under Kaffe.

Kaffe mostly complies with JDK 1.1, except for a few missing parts.

Parts of it are already JDK 1.2 (Java 2) compatible."

--

John

<http://gcc.gnu.org/java/> - The GNU Compiler for the Javatm Programming Language



Q: I will be thankful if anyone tells me why JVM is called virtual machine.

Answer: JVM is called a virtual machine because there is no real hardware which interprets the byte code. If you have done any assembly programming for any microprocessor/microcontroller you will be able to understand this. A microprocessor has a builtin instruction set to interpret the assembly code. Similarly the JVM is similar to a microprocessor in the sense it has its own instruction set but it is implemented in software. That is why it is called a virtual machine!



Q: Do anyone know the difference between java and C#.

Answer: They are different languages. Java has been around for about five years. C# has not been publicly released yet. One is written by Sun Microsystems, one by Microsoft. They are fairly similar languages with C# having a few extra bits added on to it.

--

Phil

C# bytecodes can be compiled to native exe files just as Java bytecodes can be. But C# is expected to be more closely tied to the Windows operating system and standard interfaces that are part and parcel of Windows. Writing a native compiler that collects all these interfaces and combines them into a unified whole that can run on ANY operating system may require compiling proprietary windows components which Microsoft will make sure is hard to do and against its licensing policies. So you can expect to see native compilers that compile for Windows platforms but not to other operating systems.

--

alankarmisra



Q: I read PHP 4 times faster than JSP. Why then do we need JSP?

Answer: These tools fill somewhat different niches and seldom directly compete.

PHP is good for situations where your page can interact more or less directly with a database, without the need for complex business logic. Its strength is that it can be used to build pages VERY quickly. And, as you note, they run very quickly as well.

The JSP/Servlet model is more geared toward distributed n-tier applications where there is at least logical, and possibly physical, separation of model, view, and controller functions. It is more complex than PHP, but also more scalable, and well-written Java apps may be a great deal more maintainable because of the separation of logical tiers.

They're both nice tools, and I use both, but I don't think either one is going to kill the other anytime soon.

--

Joe



Q: My question is : is JSP as powerful as servlet?

I heard that JSP will eventually compile into servlet class file.

One thing can be done by servlet, can it be done by JSP too? In terms of http.

Answer: Everything a servlet does can be done in JSP and vice versa. Good programming practice (you will see some articles over the last year in JavaPro) dictates to combine servlets and JSP in any significant web application.

JSP should be mainly HTML (or XML, or WML or whateverML) with little Java inside.

Servlets should be Java with few or not at all lines like this:

```
out.println( "<html>" );
```

```
out.printlb( "<body>" );
```

This creates a more or less clean separation between presentation (JSP) and business logic (servlet).

Java beans also have a role in this. I strongly recommend the JavaPro articles or whatever text on the MVC model you can find.

--

eugene aresteanu



Q: I'm just starting to learn Java on my own. Should I first learn AWT or should I jump directly into the Swing of things?

Answer: Will you be wanting to code applets that are easy for anyone to run in their browser? If so, you'll probably have to go with the AWT for now.

The AWT isn't so bad, but Swing makes a lot of things much easier, so if you want to ship native-code applications or suchlike then I'd go with Swing. I still use the AWT, but I find myself having to code a lot of 'standard' things myself.

--

Mark

Swing make things easier but IE doesn't support it.



Q: I can't manipulate inodes on my linux box ... in fact I can't even get real info about a file! Java is a bad hack and is for kids who aren't sharp enough to do C++.

Answer: Think of Java in the same terms as COBOL and VB, and you've got the right idea. Start thinking of it as a replacement for C++ and you're on the wrong track.

Don't expect this portable language to be a tool for low-level coding with hooks into the OS and hardware internals. It just wasn't designed for that. It's an excellent \*applications\* language, not a \*systems\* language like C or assembler.

On the other hand, if any pesky Java programmers tell you that C++ is dead and that Java can do everything C++ does, and more, you may howl with laughter and tell them to eat their JVM.

--

David Ehrens



Q: I wonder what happened if I remove "deprecations" from my code, for example size() and put getSize().

Don't the programs work any more on older browsers (e.g. IE3)?

Answer: Check the docs to see whether they say "Since 1.1", "Since 1.2" or "Since 1.3" - if so, they will not work in the oldest MS VM.

Keep in mind that Sun's programmers haven't been very good at actually documenting this for all classes and methods.

or directly here:

To check your code against any version of the JRE (1.1, 1.2, 1.3), use JavaPureCheck:

<http://java.sun.com/100percent/>

--

Marco



Q: How do we exchange data between Java and JavaScript and vice-versa?

Answer: Public variable and methods of Java Applet are visible to a HTML document. So using JavaScript you can access the public variables and public functions.

The syntax is:

```
var some_var = document.appletname.variable_name
```

With this you will get the value of the variable `variable_name` in your JavaScript variable `some_var`.



Q: Constructors and methods: are they the same?

I need a little help here...I have been teaching that constructors are not methods. This is for several reasons, but mainly because JLS says "constructors are not members" and members are "classes, interfaces, fields, and methods."

So, now the rest of the staff is ganging up on me and making life a little nasty. They quote Deitel and Deitel, and Core Java (which references "constructor methods") and who knows how many other books.

The one we are teaching in is loaded with so many errors that even though it calls constructors methods NOBODY will quote it as an authority.

How can so many people call constructors methods if they aren't.

Okay. Are they or aren't they? I holding to the definition that they are not unless it is so common to call them that, that I will have to change.

Comments?

Answer: If you go by the JLS (Java Language Specification) and the Java API (and you should) , then no, constructors are not methods. Consider that `Class.getMethods()` returns an array of `Method` instances and `Class.getConstructors()` returns an array of `Constructor` instances, and `Constructor` and `Method` or not interchangeable (one is not derived from the other), but both implement the `Member` interface. Seems to me that Java is going out of its way to differentiate them.

Besides, the mechanics of constructors are so different from the mechanics of methods, there seems to be no value to considering one a member of the set of the other.

Now, as far as teaching the language goes:

Methods:

- + return types
- + called by name
- + executed multiple times

Constructors:

- + `super(...)` or `this(...)` as first instructor (often implicit)
- everything else

I very much do not like trying to lump the two concepts together, especially in introductory courses. Conceptually they are very, very different things.

A constructor is a unique element (even if there are several). It has the name of the class, its declaration is different, and it doesn't have the same syntax as a method. It plays a unique role. You can call a method from a constructor, but you cannot call a constructor from a method.

I say constructors are distinct from methods, and for students, blurring the distinction will lead to problems.

--

by Chuck McCorvey, Chris Wolfe, Paul Lutus



Q: Simple question: why constructor doesn't work in following example?

```
class Start {
    public void Start() {
        System.out.println("Konstruktor START");
    }
}

public class Test {
    public static void main(String[] args) {
        Start s = new Start();
    }
}
```



Answer: Because you have included the return-type 'void' in the method declaration, it becomes a normal method, that just happens to have the same name as the class - so it won't get used as a constructor. Remove the 'void' and it should work.

--

Vince Bowdren

P.S. by John: If you do not specifically define any constructors, the compiler inserts an invisible zero parameter constructor "behind the scenes". Often this is of only theoretical importance, but the important qualification is that you only get a default zero parameter constructor if you do not create any of your own. Your program used this zero parameter constructor and you saw nothing...



Q: Why we can not declare constructor as final ?

Answer: The keyword final when dealing with methods means the method cannot be overridden. Because constructors are never inherited and so will never have the opportunity to be overridden, final would have no meaning to a constructor.



Q: In Java, does exist a function like sprintf in C ?

Answer: <http://www.efd.lth.se/~d93hb/java/printf/index.html> a free Java version of fprintf(), printf() and sprintf() - hb.format package



Q: If I declare an array of an objects, say Dogs, is that memory taken when I create the array or when I create the objects in the array when I declare this array:

```
Dog[] dog = new Dog[100];
```

or does it take the memory when I actually create the Dogs in the array eg:

```
for(int i = 0; i < dog.length; i++) dog[i] = new Dog();
```

Answer: The statement above is actually two-fold. It is the declaration and initialisation of the array. Dog[] dog is the declaration, and all this does is declare a variable of type Dog[], currently pointing to null.

You then initialise the array with new Dog[100], which will create 100 elements in the array, all of them referencing null.

It is important to realise that the elements of an array are not actually objects, they only reference objects which exist elsewhere in memory. When you actually create the Dog objects with new Dog(), these objects are created somewhere in memory and the elements in the array now point to these objects.

**Pedant point:**

Nothing ever points to null. It is a constant that represents the value of a reference variable that is not a pointer to some object new Dog[100] creates an array of 100 null Dog references.



Q: How do I return more than one value using the return command?

Answer: You could make a new object/class that contains these two values and return it. For example:

Define an object like this:

```
class MyObj {  
    public int myInt;  
    public double myDouble;  
}
```

Then, in your method create one of these, set the corresponding values, and return it.

```
MyObj yourMethod() {  
    MyObj obj = new MyObj()  
    obj.myInt = 20;  
    obj.myDouble = 1.0003
```



```
    return obj;
}
```



Q: How do I use object serialization for an object that has other objects as data member? Do both the class need to implement serialize?  
How about static data?

```
class A{
}
class B{
public A a;
}
```

Answer: Both the object and all the object references it contains need to belong to classes that implement Serializable.

Static and transient fields are not serialized. For more, see,  
<http://java.sun.com/docs/books/tutorial/essential/io/serialization.html>



I recently learned a bit about "inner classes" but this seems to be different...

Q: I'm a bit new to Java programming so bear with me. My employer bought a package of java graphics library programs to support some chart applets we want to create. We have the source code. I'm trying to create a jar file with all the files I need to run the applet. When I currently run the applet, the browser java tool says that it can't find "TextComponent\$1.class". I recently learned a bit about "inner classes" but this seems to be different. The "TextComponent.java" file does contain some inner classes, but not a class called "1". I'm confused. Is this an inner class? Or is it something else. Any help would be appreciated. Thanks...

Answer: The TextComponent\$1.class is the first anonymous class defined in TextComponent.java. Since nested (inner) classes are compiled to their own .class file, they needed unique names. The javac compiler is just creating a unique file name for an anonymous nested class.



Hi there, does anybody know a good source of design patterns written in JAVA ?

Answer: A pretty good (free to download) book.

<http://www.patterndepot.com/put/8/JavaPatterns.htm>



Q: Whats the difference between the two: System.err. and System.out? When should we use System.err?

Answer1: System.out leads the output to the standard output stream (normally mapped to your console screen), System.err leads the output to the standard error stream (by default the console, too). the standard output should be used for regular program output, the standard error for error messages. If you start your console program regularly both message types will appear on your screen.

But you may redirect both streams to different destinations (e.g. files), e.g. if you want to create an error log file where you don't want to be the regular output in.

On an UNIX you may redirect the output as follows:


```
java yourprog.class >output.log 2>error.log
```

this causes your regular output (using System.out) to be stored in output.log and your error messages (using System.err) to be stored in error.log


Answer2: System.err is a "special" pipe that usually is directed to the standard console. You can redirect the

System.out with the normal pipe control (| or >), but System.err no. If you want to put both the "normal" output and the "error" output to a file you must use the special redirect 2>.

This allow you to send normal messages into a file or in the /null black hole, but still receive the error messages on the console.

 What is the essential difference between an abstract class and an interface? What dictates the choice of one over the other?

Answer: You can only extend one class (abstract or not) whereas you can always implement one or more interfaces. Interfaces are Java's way to support multiple inheritance.

 Does anyone know how could I get the size of an Enumeration object? The API for Enumeration only contains getNext() and next().

Answer 1: You can't. Theoretically, some classes that implement Enumeration may also provide some way to get a size, but you'd have to know about the more specific run-time type and cast to it... and none of the standard java.util Collections classes nor Vector or such provide these methods in their Enumeration implementations.

Answer2:

you can make your own class like this:

```
import java.util.*;

public class MyEnumeration{
    int size;
    int index = 0;
    Enumeration e;

    public MyEnumeration(Vector v){
        size = v.size();
        e = v.elements();
        index = 0;
    }


    public boolean hasMoreElements(){
        return e.hasMoreElements();
    }

    public Object nextElement(){
        index++;
        return e.nextElement();
    }

    public int size(){
        return size;
    }

    public int getIndex(){
        return index;
    }
}
```

--  
by Nicolas Delbing and Victor Vishnyakov

 Is there a way to provide values for a Vector in the source code, analogous to array initializers?

Answer: The Vector class constructors take no arguments other than Collection (since JDK 1.2), which is abstract, and since a Vector is a structure whose size can change dynamically, it's contents can only be initialaized through member methods.

--

Mike Lundy



How would I add a help file to a java application?

Would it have to be platform specific, or is there a Java api for making help files?  
If so, what is it?

Answer: See JavaHelp at <http://www.javasoft.com/products/javahelp/>

you create HTML pages for the main text, and add some XML files for a hierarchical table of contents and a map from TOC tags to relative URLs giving document locations.



What is a Just-In-Time(JIT) compiler?

Answer: It is a JVM that compiles Java instructions (called bytecode) into native machine instructions at run time and then uses this compiled native code when the corresponding Java code is needed. This eliminates the constant overhead of interpretation which tradition first generation JVM's used.

--

Dave Lee



Is there a collection object like the hashmap or hashtable that stores values in an ordered path? Vector does this but i need the key/value functionality. hashmaps do not guarantee the order of the objects.

Answer: Take a look at java.util.TreeMap.

Red-Black tree based implementation of the SortedMap interface. This class guarantees that the map will be in ascending key order, sorted according to the natural order for the key's class (see Comparable), or by the comparator provided at creation time, depending on which constructor is used.

Note that this implementation is not synchronized. If multiple threads access a map concurrently, and at least one of the threads modifies the map structurally, it must be synchronized externally.



Most people asked why there is an error, but my question is why this is NOT an error

Please take a look:

r is a number and s is a character, why can I put them together to make a comparison without compilation error?  
Could somebody tell me... thank you

```
double r = 34.5;
char s = 'c';
if (r > s) {
    System.out.println("r > s");
} else {
    System.out.println("r < s");
}
```

Answer1: Yes, char is indeed a 16-bit value. However, the actual answer is in the Java Language Specification, section 5.6.2, which is at the following URL:  
[http://java.sun.com/docs/books/jls/second\\_edition/html/conversions.doc.html#170983](http://java.sun.com/docs/books/jls/second_edition/html/conversions.doc.html#170983)

In summary, the char is automagically promoted to a double. No explicit cast is necessary since the language rules say that it gets "promoted" to a double  
by John O'Conner



Q: == and equals ()... These two still make me confuse a lot of time.

Can somebody give me some thumb rule or explain it to me?

Answer: When you use == with a primitive -int, double, char, ... you are checking that the values are identical. But if you use == with an object, you are checking that the 2 objects are stored at the same address. In other words the references pointing to the same object...

Method equals () is different.

It is the same as ==, if it isn't overridden by the object class.

Many classes override the method equals (). In this case this method will check that content of the object is the same or not, not addresses.



Q: Why do I get message like "wrong magic number" when I am trying to run applet? What is magic number?

Answer: The first thing a JVM does when it loads a class is check that the first four bytes are (in hex) CA FE BA BE. This is the "magic number" and thats why you are getting that error, you are trying to load a file that isnt a class and so the class loader in the JVM is throwing out that exception.

Make sure you transfer the class files to site in binary mode, rather than text or ASCII mode.

An error from the browser saying "cannot start applet ... bad magic number" usually means that one of the class files on the server is corrupted. '

Replace your class binary files on the web server; clean up the cache of your browser, and reload your applet.



Q: In java, I found a lot of methods, which let you enter a line (read (), readLine () e.c.t). They all wait until return is pressed, and then start providing you the information.

Does anyone know if there is a read method available whit the desired behaviour, i.e. which doesn't wait for return being pressed?

Answer: Java does not provide it, the terminal itself waits until return is pressed before sending the entered line to Java.

You need to use some platform specific mechanism to change the terminal settings.



Q: Can I pass a function as a parameter in Java? If so, how?

Answer: No, you cannot. But you can pass an object with method and then just use this method like this:

```
myFunction (object); // object has method useMyMethod(){ do smth here...}
```

```
..
```

```
..
```

somewhere in another place where use this function..

```
object.useMyMethod();
```



What is difference capacity() and size() methods for vector?

What is difference between

```
public final int capacity()
```

Returns the current capacity of this vector.

and

```
public final int size()
```

Returns the number of components in this vector.

Answer: please read this method: ensureCapacity

```
public final synchronized void ensureCapacity(int minCapacity)
```

Increases the capacity of this vector, if necessary, to ensure that it can hold at least the number of components specified by the minimum capacity argument.

Parameters:

minCapacity - the desired minimum capacity.



What're the differences between classpath and import in the java application?

Do I need to have the package in the classpath first before importing in a java application or need not?

Answer: Classpath is an environment variable of your OS, you have to set it (or better: Java sets it) to tell Java where to search for classes.

You use import in a program to let Java search for the specified classes within the classpath. This implies that the package must be in the classpath.

--

Stephan Effelsberg



Q: What is difference between Iterator and Enumeration?

First of all Java FAQ Team wish you !!!HAPPY NEW YEAR!!! and then

Answer: from <http://java.sun.com/docs/books/tutorial/collections/interfaces/collection.html>

The object returned by the iterator method deserves special mention. It is an Iterator, which is very similar to an Enumeration, but differs in two respects:

Iterator allows the caller to remove elements from the underlying collection during the iteration with well-defined semantics.

Method names have been improved.

The first point is important: There was no safe way to remove elements from a collection while traversing it with an Enumeration. The semantics of this operation were ill-defined, and differed from implementation to implementation.

The Iterator interface is shown below:

```
public interface Iterator {  
    boolean hasNext();  
    Object next();  
    void remove(); // Optional  
}
```

The hasNext method is identical in function to Enumeration.hasMoreElements, and the next method is identical in function to Enumeration.nextElement. The remove method removes from the underlying Collection the last element that was returned by next. The remove method may be called only once per call to next, and throws an exception if this condition is violated. Note that Iterator.remove is the only safe way to modify a collection during iteration; the behavior is unspecified if the underlying collection is modified in any other way while the iteration is in progress.

The following snippet shows you how to use an Iterator to filter a Collection, that is, to traverse the collection, removing every element that does not satisfy some condition:


```
static void filter(Collection c) {  
    for (Iterator i = c.iterator(); i.hasNext(); )  
        if (!cond(i.next()))  
            i.remove();  
}
```

Two things should be kept in mind when looking at this simple piece of code:


The code is polymorphic: it works for any Collection that supports element removal, regardless of implementation. That's how easy it is to write a polymorphic algorithm under the collections framework!

It would have been impossible to write this using Enumeration instead of Iterator, because there's no safe way to remove an element from a collection while traversing it with an Enumeration.




 How can I find the first dimension length of the 2-dimensions array? I have use the array[].length but it does not work, how can I solve this problem?

Answer: Java doesn't really have "multidimensional arrays", only arrays of arrays. So try: array[0].length and you will get this dimension.

 I guess what I'm asking is "Is java.util.Hashtable thread safe?"

Q: It's been a while since I've used hashtables for anything significant, but I seem to recall the get() and put() methods being synchronized. The JavaDocs don't reflect this. They simply say that the class Hashtable is synchronized. What can I assume? If several threads access the hashtable at the same time (assuming they are not modifying the same entry), the operations will succeed, right? I guess what I'm asking is "Is java.util.Hashtable thread safe?"

Answer: That is right! It is recommendable, if you have questions like these, always look at source for the API, it's freely available.

 Q: I try to copy an object of my own using the clone() method from java.lang.Object, but this is a protected method so I can't use it. Is there some other way to get my objective of duplicating an arbitrary object?

Answer: If you want to clone your object, you need to make it cloneable. To achieve this, you need to do two things:

1. implement the interface Cloneable
2. override the method clone(), so that it
  - a. becomes public
  - b. calls super.clone()
  - c. if necessary, clones any members, or
  - d. if a member can't be cloned, creates a new instance.

Simple example:

```
public MyClass implements Cloneable {
    int someNumber;
    String someString;

    public Object clone() {
        // primitives and Strings are no
        // problem
        return super.clone();
    }
}
```

In this case the method clone() of the class MyClass returns a new instance of MyClass, where all members have exactly the same value. That means, the object reference 'someString' points to the same object. This is called a shallow copy. In many cases this is no problem. Strings are immutable and you do not need a new copy. But if you need new copies of members, you have to do it in the clone() method. Here is another simple example:

```
public class SomeMember implements Cloneable {
    long someLong;

    public Object clone() {
        return super.clone();
    }
}
```

```

public AnotherClass extends MyClass {
    SomeMember someMember;

    public Object clone() {
        AnotherClass ac = (AnotherClass)(super.clone());
        if (someMember != null) {
            ac.someMember = (SomeMember)(someMember.clone());
        }
        return ac;
    }
}

```

Note that the class AnotherClass, that extends MyClass, automatically becomes Cloneable, because MyClass is Cloneable.

Also note, that super.clone() always returns an Object of the type of the actual object, although the superclass doesn't know anything about that sub class. The reason is, that Object.clone() is a native method, which just allocates new memory for the new object and copies the bytes to that memory. Native code has it's own ways of finding out which type to return ;-)

--  
Karl Schmidt



I was just wondering about the usefulness of Interfaces...

I was just wondering about the usefulness of Interfaces. I was under the impression that interfaces could be used to perform multiple inheritance. But an interface only declares a method - in a very abstract way.

A class that implements an interface needs to define its own implementation of a certain method. What is the use of having an interface when nothing is being gained...?

Answer: If two classes implements the same interface, you can get a reference to the interface instead of the effective class without bother what class are you managing.

This is very useful in RMI (for example) or in any condition when you have to take an object without knowing exactly his class, but only the interface that it implement.

For example:

```
public void recurseList( List l )
```

the generic List ensure that you can use every List for this method (ArrayList, AbstractList, Vector...), so your calling method can be:

```
ArrayList l = new ArrayList(); or
Vector l = new Vector();
```

```
recurseList( l );
```

Without any problem.

by Davide Bianchi



Q: I got a problem with an array/vector...

I got a problem with an array/vector.

my class contains a member:  
static Vector quad[][];

....

in my constructor I got:  
Vector quad[][] = new Vector[row][col];  
for (int i = 0; i < row; i++){

```

    for (int j = 0; j < col; j++){
        quad[i][j] = new Vector (0,1);
    }
}

```

// row and col are int between (10..50) -- it's a big I know, but that might not be the problem

My PROBLEM (and I don't know what to do, really), I can't access quad[x][y] outside of the constructor!!!! Within the constructor I've got full access on quad[x][x]. Java (1.2) returns a NullPointerException on any method except within the constructor!!!

What's my fault!???

Answer: I guess you shouldn't write Vector here:

```
Vector quad[][] = new Vector[row][col];
```

so, the correct variant may be:

```
quad[][] = new Vector[row][col];
```

I guess You just overridden your static variable with one defined in your constructor:

```
Vector quad[][].
```

Thus, you're initializing NOT your class-scope static variable but your constructor-scope quad. It's not reachable outside the constructor. And as for static quad, it has never been initialized! And a first reference to it causes NullPointerException. I guess. I hope I'm right :)

--

Xao Rom



Q: I propose that Java should allow multiple inheritance if...

Everyone knows the potential problem with multiple inheritance is when you run into the problem of having two instances of a grand parent super class.

For example:

```
class A extends D {int i; }
```

```
class B extends D {int i; }
```

```
class C extends A,B {}
```

Potentially, you could have two copies of D for each instance of C.

However, I propose that Java should allow multiple inheritance if there are no instance variables associated with the abstracts that the base class is extending.

```
abstract class A { public setX(); public setY(); public setAll() {setX (); setY(); }
```

```
abstract class B { public setC(); public setD(); public setBoth()
```

```
{setC(); setD(); }
```

```
class C extends A,B {}
```

You won't have two instances of some grandfather class, since A and B doesn't have instances variables.

I hope the next versions of Java explores this issue.

Answer: It does. They're called interfaces:

```
interface A { public void setX(); public void setY(); public void setAll(); }
```

```
interface B { public void setC(); public void setD(); public void setBoth(); }
```

```
interface C extends A,B {};
```

```
public abstract class D implements C {
}
```

--

jim



Is there a way to know from class X which class called the method foo()?

If class A and class B are calling a method foo() on class X, is there a way to know from class X which class called the method foo() (they can be either A or B). I know that this can be done by capturing the stack trace and examining it, but that solution looks expensive as I have to create a new Throwable object every time and capture stack trace (And I do this quite frequently).

Is there any other elegant solution to do this, any help and direction is appreciated.

Answer: Pass a reference to the class to the foo() method.

```
foo(Object x){
    System.out.println(x.getClass());
}
```

should do it.



Why does this simple application never exit?

```
public class UIQuitTest {
    public static void main (String[] args) {
        java.awt.Frame f = new java.awt.Frame();
        f.dispose();
        f = null;
    } // end of main ()
}
```

The application above never quits, is it a bug or a (mis)feature? Win98, JRE 1.3.0

Answer: By creating an AWT object, you now have started the AWT thread. In order to end the application now, you have to do a System.exit(0) that will kill all non-daemon threads, including the AWT thread.



Q: Is it possible to stop an object from being created during construction?

For example if an error occurs inside the constructor (e.g. the parameters pass in were invalid) and I wanted to stop an object being created would it be possible to return null rather than a reference to a new object. (I know the term return is technically correct in this case but you know what I mean). Basically, is it possible to cancel object creation?

Answer: Yes, have the constructor throw an exception. Formally, an object will be created (since the constructor is a method invoked after the actual method creation), but nothing useful will be returned to the program, and the dead object will be later reclaimed by Garbage Collector.

But the clean way is as another reply suggests, that you leave calls to the constructor to a static factory method which can check the parameters and return null when needed.

Note that a constructor - or any method in general - throwing an exception will not "return null", but will leave the "assign target" as it was.

Tor Iver Wilhelmsen



Q: What does mean "volatile"?

For the past couple of hours, I've seen quite a few set of codes that has the `_volatile_` keyword.

E.g.

```
private volatile somethingsomething....
```

What does it mean?

Answer: See JLS 2nd Edition, which just came out last year, still mentions it.

[http://java.sun.com/docs/books/jls/second\\_edition/html/classes.doc.html#36930](http://java.sun.com/docs/books/jls/second_edition/html/classes.doc.html#36930)

"A field may be declared volatile, in which case a thread must reconcile its working copy of the field with the master copy every time it accesses the variable. Moreover, operations on the master copies of one or more volatile variables on behalf of a thread are performed by the main memory in exactly the order that the thread requested."

Seems just like the idea in C++ and appears still to me present in the language.

Synchronization certainly has its place in many applications, that doesn't mean that volatile is not longer used or part of the language.

--

Paul Hill



Q: If some method is deprecated does it mean that one gets a chance not to find this method in some Java version?

Answer: It means it *may* be dropped in a future version, but chances are it's still there. I'm not sure I've seen any deprecated features actually being removed from an API yet - often they're turned into no-ops first, if they're dangerous.

Jon Skeet - <http://www.pobox.com/~skeet>

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: suppose I put a file a.txt in package com.xyz and then try to access it like following. Will it work?

```
import com.xyz.*;
public class Hello{
    File f = new File("a.txt");
    ...
}
```

it is not working for me. Is there any workaround?

Answer: If the source and the text file are in the jar file, then you access the file by:

```
URL fileURL = getClass().getResource("file.txt");
```

You can then read the file by using a reader (or whatever you choose),  
e.g.:

```
_istream = new BufferedReader( new
InputStreamReader(fileURL.openStream()) );
```

--

j o h n e w e b e r

Or, simpler  
`getClass().getResourcesAsStream("file.txt")`, but you must be sure that  
file is in the same directory ( package ) as your class, otherwise you  
need to play with `getClassLoader().getResourceAsStream( <path>"/file.txt" );`

--

Oleg



Q: Difference between loading and instantiating a class???

Well, the subject says it all. What is the difference between loading and instantiating a class in a JVM.



Second question: What would happen if at runtime I update a class file? Will the JVM know to use that instead?

Answer: The difference is that when a class is loaded by a ClassLoader it is read in as a stream of bytes, presumably from a file, but it could just as easily be from over the network, and then processed or "cooked" into a representation that the VM can use to make instances of Objects of that classes type. This last part is the instantiation. You can load a class at runtime with:

```
Class.forName( "MyClass" );
```

and instantiate one with:

```
MyClass mc = Class.forName( "MyClass" ).newInstance();
```

Cool, eh. You don't have to know the name of a class at compile time.

>Second question: What would happen if at runtime I update a class file?

>Will the JVM know to use that instead?

Loaded classes are cached because it's quite costly to do the "cooking" I mentioned above. So it will not be loaded. You may create a separate ClassLoader with new SecureClassLoader but that will cause all classes \_it\_ loads to be loaded from this new ClassLoader but that's not what you want.

I don't know if you can specify that a class should be loaded from disk again using the normal ClassLoader. You could very easily make your own ClassLoader in which case you would have explicit control over such things. Look at java.lang.ClassLoader and java.lang.Class.

--

Michael B. Allen



Q: Why developers should not write programs that call 'sun' packages?

Answer: Java Software supports into the future only classes in java.\* packages, not sun.\* packages. In general, API in sun.\* is subject to change at any time without notice.

A Java program that directly calls into sun.\* packages is not guaranteed to work on all Java-compatible platforms. In fact, such a program is not guaranteed to work even in future versions on the same platform.

For these reasons, there is no documentation available for the sun.\* classes. Platform-independence is one of the great advantages of developing in the Java programming language. Furthermore, Sun and our licensees of Java technology are committed to maintaining backward compatibility of the APIs for future versions of the Java platform. (Except for code that relies on serious bugs that we later fix.) This means that once your program is written, the class files will work in future releases.

For more details, see the article [Why Developers Should Not Write Programs That Call 'sun' Packages](http://java.sun.com/products/jdk/faq/faq-sun-packages.html).

<http://java.sun.com/products/jdk/faq/faq-sun-packages.html>



Q: Can garbage collector remove my singleton?

A usually singleton..

```
public class Single{
    private static Single single;
    private Single {}
    public static Single getInstance(){
        if(single==null){
            single = new Single();
        }
        return single;
    }
}
```

Well,, seems good ?

But classes are objects too...so do Java 2 v1.3 class garbagecollecting? Meaning my singleton could dissappear if i dont keep a reference to it (or the class itself) somewhere ?

If classes is not garbagecollected, that's pretty stupid, I dont want classes taking up memory when i perhaps never will use it again....

Answer: No. Classes can define objects. That is, only the dynamic part of the class defines objects. The static part exists only in one place in memory and can not be duplicated. You can call the getInstance() method from anywhere in your program.

Java requires however that you tell where to find the method, in this case in the Single class.

Therefore, you should use

Single.getInstance()

to get the instance. This is (though it looks much like it) not an execution of a method on an object, but just a method call without object. Single is only used to find out which getInstance() method should be used, and where it is.

You could add a delete() method if you don't need the instance anymore:

```
public class Single{
    private static Single single;
    private Single {}
    public static Single getInstance(){
        if(single==null)
            single = new Single();
        return single;
    }

    public static delete(){
        single = null;
    }
}
```

The garbage collector can now remove the single object after delete() is called if memory is needed.

--

Rijk-Jan van Haaften

Dept of Computer Science, Utrecht University, The Netherlands

P.S by John:

Doing more deeper investigation of this question I found one very good article about this topic. Everybody who are interested can read full article here:

<http://developer.java.sun.com/developer/technicalArticles/Programming/singletons/>

For the rest of our audience shortly:

A Singleton class can be garbage collected and when

".. a Singleton class is garbage-collected and then reloaded, a new Singleton instance is created. Any class can be garbage-collected when no other object holds reference to the class or its instances. If no object holds a reference to the ' Singleton object, then the Singleton class may disappear, later to be reloaded when the Singleton is again needed. In that case, a new Singleton object will be created. Any static or instance fields saved for the object will be lost and reinitialized.

This problems exists in older Java™ Virtual Machines1. JDK 1.2 VMs, in particular, conform to a newer class garbage collection model that forbids any class in a given classloader to be collected until all are unreferenced"


And you "... can also set your VM to have no class garbage collection (-Xnoclassgc on the JRE 1.3, or -noclassgc on the IBM JVM). Keep in mind that if you have a long-running program that frequently reloads classes (perhaps through special class loaders such as the remote class loaders), you have to consider whether that could cause a problematic buildup of garbage classes in the VM."

Also some people asked what is a Singleton and what is relation has it to Java.

Shortly a Singleton is one of classical design patterns that are used in software development. More please read

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

in free book here:  
<http://www.patterndepot.com/put/8/JavaPatterns.htm>

 Q: I study patterns now and would be lost and forget everything very soon! Help!

I am very new to design patterns and just bought the GoF book to learn about it. But as I complete the first couple of chapters right away, I see that they have 23 different patterns and I would be lost and forget everything very soon if I sequentially (page by page) read the entire book!.

Do any of you have recommendations on how to proceed with this book so that I'll remember at least some of them by the time I am done with the book? I can see that many of the classes in java API use composition, facade etc...

But other than that I don't think I'll be able to gather anything unless I am able to remember where & when to use particular pattern A, B or C...

Answer: Glad to hear you got the GoF book, it's a great reference manual for patterns. As you've found, however, it's a bit heavy to just "read." What I recommend to people is that they pick a few of the easier, more commonly used patterns: Singleton is a no-brainer that pops up a lot. Adapter tends to get used here and there and isn't that difficult to understand. If you're doing Swing, then definitely go learn the Observer pattern. It'll help to keep you from mixing data and interface code. Once you've learned three or four and have used them a few times, then as you start new projects, look back to the text to see if there are opportunities in your project where other patterns can be used.


You'll find that over time you'll use more and more of the patterns (some a lot more than others, obviously). I've often found cases where I missed a pattern during design and had "the light go on" after I'd written a bunch of code and realized I was either using a known pattern by accident, or could have used a pattern to my advantage. When possible, I then go back and adjust the design/code to match the pattern.

Keep in mind that the patterns generally don't appear as "absolute." It's expected that you may have variations to satisfy your application's needs.

It's really helpful to others, however, if you make a quick note in your design doc/code about what pattern you were using (which helps them learn patterns too, and helps them understand what you were up to if they know the pattern already).

--

Rico Trooper

 Q: When I used `java.util.Hashtable`, I also used interface `Enumeration`. But I found that this interface contains defined methods.

How can an interface contain defined methods? Isn't an interface supposed to hold abstract methods only?

Answer:

> How can an interface contain defined methods?

No.

> Isn't an interface supposed to hold abstract methods only?


Yes. (and fields). I'm not sure why you think `Enumeration` contains defined methods, since it does not (I checked the source to be sure). Keep in mind that an implementing class is also of type `Enumeration`. So `Hashtable`'s `keys` method which returns an `Enumeration` will actually be returning an inner class that implements `Enumeration`

(and therefore defining `hasMoreElements` and `nextElement` in a manner that is specific to traversing a `Hashtable`).

If this doesn't help, maybe you could clear up what you mean by `Enumeration` having defined methods.

--

Eric

 Q: can anyone provide an example on how to use `clone()` and `clonable` interface?

Answer:

```
//Class Point uses default clone implementation that returns
//shallow copy of Point (which is sufficient in this case).
class Point implements Cloneable {
    int x, y;
}
class ImmutableRectangle {
    private Point lowerLeft = new Point();
    private Point upperRight = new Point();
    public Point getLowerLeftPoint() {
        try {
            return lowerLeft.clone();
        }
        catch(CloneNotSupportedException e) {
            //shouldn't occur since Point is cloneable
            throw new InternalError();
        }
    }
}
```

we don't want Rectangle points to be changed outside its class. the best way would be to create a copy of Point object and pass it.

i5mast  
MVP for Java 2  
<http://www.brainbench.com>



Q: I am looking for more efficient compression APIs esp. for \*.doc and \*.html files.

I need some Java APIs wherein I can implement various compression algorithms. I have already the GZIP compression technique shipped with JDK's java.util.zip package. I am looking for more efficient compression APIs esp. for \*.doc and \*.html files.

Answer: You often get better compression results for a large number of smaller files by concatenating the uncompressed files and then compressing the result. That's why tar.gz is often superior to zip for large numbers of html files (like API docs).

You will not get much better general-purpose compression than Zip, at least not until you have a specific class of data and know very much about its structure. Even then you'll need some experience and time working on a better compression method.

You might want to take a look at this Java implementation of bzip2:  
<http://www.aftexsw.com/aftex/products/java/bzip/>  
It uses more CPU cycles and memory but typically compresses better than zip.

--  
Marco



Q: I need to programmatically replace an entry in a zip file.

I could not quite get it using the ZipOutputStream because it simply creates a new file and write only that entry for me. The rest of the original entries are gone.  
Does anyone have a solution for this?

Answer:

- 1) Read the file (myfile.properties) out of the original Zip Archive (original.zip)
- 2) Make your changes, write the file to the file system
- 3) Create a New Archive (originalNew.zip)
- 4) Write your edited file (myfile.properties) to originalNew.zip
- 5) loop through all the entries in the original Zip archive (original.zip), adding them to the new archive

(originalNew.zip) EXCEPT for the file you are replacing (myfile.properties)  
6) When you're done, erase the original and rename your new one to original.zip.

I believe that this may be the only way to do this, since there doesn't seem to be any random access in the ZIP file.

--

Kevin T. Smith



Q: About the order of my elements in hashtable...

I save some data into hashtable.

For example,

```
hashtable.put ( "1", "one" );  
hashtable.put ( "2", "two" );  
hashtable.put ( "3", "three" );
```

```
when I get back the element from hashtable using Enumeration class ,  
Enumeraton e = hashtable.keys();  
while ( e.hasMoreElements() ){  
    Object k = e.nextElement();  
    Object v = hashtable.get (k);  
}
```

the default result is

"3", "three"

"2", "two"

"1", "one"

here I want to get the data sorted as ascending. ( the order as I insert ) such as

"1", "one"

"2", "two"

"3", "three"

or is it possible to get the data from end of hashtable?

Answer: When you insert elements into a Hashtable, they will not be stored in the order you insert them. They are stored in a way that makes it easy to find them by the key you specify.

So, you must either use another data structure (e.g. Vector) or sort them after you retrieve them from the Hashtable (e.g. by using java.util.Collections, java.util.Arrays).

--

Marco Schmidt



Q: What is better to use: array or vector?

Just wondering as I am using Vectors to store large amounts of objects from 50 to 4000 and each one has to be "looked at" every time paint is called...

Just wondering if it would be better to use an array, list etc?

Answer 1: Since the Vector method uses an array for storage but has extra steps involved in getting an element, use an array for fastest access.

--

WBB Java Cert mock exams <http://www.lanw.com/java/javacert/>

Answer 2: arrays are faster, vectors are more dynamic.

This should be evident just looking at the amount of code you need to traverse one versus the other. It might also be beneficial to write a linkedlist class and use that. That way you have a dynamic container which has potential to be faster than a vector (though still not as fast as an array). The problem with arrays is that if you need more space than the current size, you have to hardcode their copying into a bigger array.



Conversely, if you never (or rarely) use the entire array, its a waste of space and memory.

The following are benchmark test results of vector vs. array (ran on a 200-Mhz Pentium w/ 96 Mbytes of memory and Windows95 ):

Allocating vector elements: 17910 milliseconds  
Allocating array elements: 4220 milliseconds  
Accessing Vector elements: 18130 milliseconds  
Accessing array elements: 10110 milliseconds

One other reason for vectors being slower that I did not mention above is that vector methods are synchronized, which creates a performance bottleneck.

Hope this helps

--

MSW



Q: Would anyone know the performance issues regarding Vector's?

I am actually talking about resource pooling. I have objects that wait in a queue. It is a vector that keeps growing, as the queue gets bigger.

Do Vectors have much performance hit? Is there a better way to implement vectors to get the best out of them? Or am I better of creating a fixed size array?

Answer 1:

If you just want a LIFO or LILO queue, you may be better off with LinkedList than with Vector, as then you'll never have to wait for the contents to be copied.

Vectors perform pretty well, but if you know (even roughly) how big you're going to need it to be, specifying that in the constructor call can help.

How sure are you that this will be a performance bottleneck? Premature optimisation is the root of all evil...

The Vector class is thread-safe. By that I mean that there is no way to corrupt the internal representation of the data by accessing the vector from more than one thread. However, it is still possible, very easy in fact, to use a vector in a way that is not thread safe.

Consider this code:

```
for (int i = 0; i < vector.size(); i++) {  
    System.out.println(vector.elementAt(i));  
}
```

It looks safe, but there's a subtle flaw..

Answer 2: Suppose you start with a vector of ten elements. On the tenth iteration i will have the value 9 and the test i < vector.size() will succeed.

Now suppose the thread scheduler chooses this moment to pause the current thread and let another thread run. This second thread removes an object from the vector. Now when the first thread resumes, the vector has only nine elements and 9 is no longer a valid index.

The elementAt() method will fail mysteriously with an ArrayIndexOutOfBoundsException. The thing you must realize is that although the size() and elementAt() methods are both thread-safe, using them together this way isn't.

The vector's synchronization lock is released between the two calls that give the second thread a chance to modify the data. The solution is to lock the vector for the entire loop like this:

```
synchronized (vector) {  
    for (int i = 0; i < vector.size(); i++) {  
        System.out.println(vector.elementAt(i));  
    }  
}
```

```
}
```

Now if another threads attempt to modify the vector while the loop is executing, it will be forced to wait until the loop ends and the vector's lock is released.

--

John Skeet, Mike

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: How do I copy one array to another?

Given that I have an byte array defined like this:

```
byte byteSmall = new byte[23];
```

and another larger byte array defined like this:

```
byte byteBig = new byte[30];
```

How do I copy byteSmall into byteBig starting at index 7 without a for loop like this:

```
for(int i = 0; i < 23; i++){  
    byteBig[i + 7] = byteSmall;  
}  
?
```

Answer: See System.arraycopy:

"Copies an array from the specified source array, beginning at the specified position, to the specified position of the destination array. A subsequence of array components are copied from the source array referenced by src to the destination array referenced by dst. The number of components copied is equal to the length argument. The components at positions srcOffset through srcOffset+length-1 in the source array are copied into positions dstOffset through dstOffset+length-1, respectively, of the destination array.

If the src and dst arguments refer to the same array object, then the copying is performed as if the components at positions srcOffset through srcOffset+length-1 were first copied to a temporary array with length components and then the contents of the temporary array were copied into positions dstOffset through dstOffset+length-1 of the argument array."



Q: More about Robot! I met with a problem in using class Robot.mousePress...

The compiling process is successful. But when I run it, I receive "IllegalArgumentException: Invalid combination of button flags". I don't quit understand this information. Part of my code is as following:

```
Robot rMouse=new Robot();  
int button=1;  
rMouse.mousePress(button);  
rMouse.mouseRelease(button);
```

I am really confused. Will you please give me some advice? Thank you in advance!

Answer: You are not using a valid value for the argument to the mousePress() and mouseRelease() methods. If you check the API documentation, you'll find the valid values are a combination of one or more of the following constants:

```
InputEvent.BUTTON1_MASK  
InputEvent.BUTTON2_MASK  
InputEvent.BUTTON3_MASK
```

plus others which represent the Ctrl, Alt, and Shift keys. To press the left mouse button, you want to use:

```
rMouse.mousePress(InputEvent.BUTTON1_MASK);
```

--

Lee Weiner



Q: In what situation an exception has to be caught otherwise the compiler will complain?

e.g. IOException does NOT have to be explicitly caught, however, SQLException has to be caught otherwise VisualAge will not compile the program.

Answer: The only unchecked exceptions in Java are RuntimeException and its subclasses. This includes such familiar classes as NullPointerException, ClassCastException, and IndexOutOfBoundsException.

IOException is not one of these, and \*does\* have to be explicitly caught or thrown

--

jeff\_robertson



Q: Is it possible to use switch with range of values?

Ex:

```
switch (iBegins){
    case 2 to 10:
}
```

Answer:

not exactly like this but:

```
switch (iBegins){
    case 2:
    case 3:
    case 4:
    case 5:
    case 6:
    case 7:
    case 8:
    case 9:
    case 10:
        /* do stuff */
        break;
    case 11:
        /* other stuff */
}
```

Jan Schaumann <<http://www.netmeister.org>>



Q: Is there a general reason why nullpointer exceptions occur?

Answer: Of course there is. A NullPointerException happens when you have a reference, it's set to null (or is a class or instance variable and has never been initialized), and you try to perform some operation on the object it points to. Since it really doesn't point to an object, you can't do that.

--

Chris Smith



Q: I am aware that the exceptions in the catch statements must be of the same type or a super type of the exception thrown in the try block.

My question is this:


Is there any significance in the ordering of the catch statements after a try block?

Answer: It is required to design you catch statement sequences with most derived exception class type first and progressing to the highest superclass. Else, the code will not compile.

For a obvious reason, if the a catch block for a given class precedes a catch block for a type that is derived from the first, the second catch block will never be executed.

--

D. Michael Nelson

 Q: I wrote a program that use a few RS232 ports. The operators are unskilled and often start multiple instances of the program. Will someone please be so kind and tell me how I can prevent them doing it?

Answer 1: The first instance might write a file. Subsequent instances could check for the existence of that file, or else check it's contents.

Another method could involve creating a server socket on a specific port. Subsequent efforts to create a socket on that same port would throw an exception.


Answer 2: Actually a better way is to (on launch):

- 1) Check if the file exists. If not, create it, open it and run. Leave it open until you quit, upon which time you close it.
- 2) If the file `_does_` exist, try to delete it. If the delete fails, then someone else has it open, which means another copy of your app is running. Inform the user and quit.
- 3) If you succeeded in deleting it, then you are the first. Now create, open and run.

Doing the above prevents the problem of having the semaphore file left around when the system crashes. I implemented it recently in one of our apps, and it works like a charm.

--

Burt Johnson  
MindStorm Productions, Inc.  
<http://www.mindstorm-inc.com>

 Q: Can you call a class static abstract method from an abstract class or does it need to be extended and then called from its concrete class?

I've been told that abstract classes do not actually have any code in them cause they are like a placeholder, so I guess you wouldn't bother calling a static method in an abstract class cause it wouldn't have any code to begin with....?

Answer: You have been told wrong. Abstract classes can and do have code in them.


See, for example, `java.awt.Component`, an abstract class with a lot of code and no abstract methods at all. If a class has any abstract method member, directly declared or inherited, it is required to be declared abstract. If not, it is the programmer's decision and should be based on whether it would make sense to have an instance of that class.

Perhaps whoever told you was confusing abstract classes with interfaces, which don't contain implementation, only abstract method and constant declarations.

You cannot declare a method to be both static and abstract. Abstract requires the method to be overridden before you can have a concrete class, static prevents overriding. You can have a static method in an abstract class - such a method could be called without creating an instance of the class, the only thing that is prohibited for abstract classes.

And when a subclass of an abstract method has been instantiated, all the methods from the original class will keep the same code in the instance. Most of the time an abstract class will have abstract methods. However, there are several examples of abstract classes that don't have any abstract methods at all. Some examples are `Component` and `FontMetrics` from the AWT. It doesn't make sense to have just a `Component` that's not a specific type of component. It doesn't make sense to have a `FontMetrics` that doesn't measure any specific kind of `Font`.

Also being abstract never prevents overriding, it just requires overriding in order to derive a non-abstract subclass. And if a class is a subclass of an abstract class, it only **MUST** override those methods declared abstract. The other methods do not require overriding.

 Q: I write java about 2 years, but I still confuse one thing that is why should we use interface???

If I need to implement an interface and just use its every methods name.  
Why shouldn't just write every methods statments in a class, not in interface??

I only can think about that if I extend a class, than can implement another or the others interface.  
As you can saw, I really confuse about this. And I do see many books for the reasons , but I can't get the answer, please tell me !

Answer: "Interface" is the Java way to do multiple inheritance, or a better way to think of it is as a way to design plug-ins.

For example, let's say we have an application that monitors a network of computers. Our monitors might check for web pages, or they may check for other ports, or they may have hooks for hardware checks.

The interface to our main control panel is always the same: We need some means to poll the monitor object for an answer. This is the "NetworkMonitor" interface and all network monitors will share this interface, but they may have a class heirarchy that is very different, for example, port-monitors may all fork a thread that periodically checks whereas our control panel interface just asks for the most recent answer; hardware monitors may ask for their data in real-time or over RPC and thus have no need of inheriting from Thread.

Because they share the same Interface definition, the control panel application does not need to know if they are polling monitors or real-time monitors because, from the control panel's point of view, it does not matter

--

...

P.S. by John

Also interfaces make our life (I mean programmers) much easier.

Imagine a big project ( a lot of programmers, many packages, thousands of files): it is impossible all the time to be aware about particular implementation of some method in specific class in another package!

Much easier to define interfaces between packages as some kind of bridges or gates into another package and their functionality, with hidden (for us) implementation. We just know interface and method names. It is enough to use those methods.

How it is implemented there does no matter... It is working!



Q: Is a static variables value likely to be garbage collected once objects of the class are no longer pointing to it? Does it destroy itself at any point or must that be done explicitly?

I have a class with a static variable I create two instances of this class.

In each instance I modify the static variable. Then I destroy the objects(point them to null), then create another instance of the same class and reference the static variable.

Answer: No - the static variables are effectively linked to the Class object rather than any instances; they will only be garbage collected when the Class is garbage collected. This will only happen if the ClassLoader which loaded the Class is garbage collected.

--

Jon Skeet

<http://www.pobox.com/~skeet>

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: I find such function, but in Class class. Is it possible to use it (or something like this) in another class? Exactly I would like call: super.super.method1();

Answer: No, you can only access methods of your direct ancestor.  
The only way to do this is by using reflection:

```
import java.lang.reflect.*;
```

```
Class superduper = this.getClass().  
getSuperClass().  
getSuperClass();  
Method ssMethod = superduper.getMethod("method1",null);  
ssMethod.invoke(this,null);
```

(I didn't check the exact syntax and parameters of the above code.)



However the necessity to skip a hierarchy shows that there is something wrong with the design of your application. You should fix this instead of using dirty tricks like the above.

---

Carl Rosenberger

db4o - database for objects - <http://www.db4o.com>

Q: If anybody can provide some tips on how to design this smartly...



Q: I am facing a problem that might sound common to you all. I have to write a switch statement with 40 case statement. I am wondering if there can be some way to reduce this. If anybody can provide some tips on how to design this smartly. :)

Answer: The alternatives are:

an array you index into to get values or delegates.

an array you binary search.

--

Roedy Green



Q: I want to use some java variables , across multiple java files. Is there some thing like a "extern in C" in java ??

Answer: If you want to share constants, the usual way is to create a class like this:

```
public class My_Constants {  
    public static final int ID_OK = 1;  
    public static final int ID_CANCEL = 2;  
  
    public static final String MSG_OK = "Okay.";  
    public static final String MSG_ERROR = "An error occurred.";  
}
```

If you want to share a single object instance across your application, use the Singleton pattern. Actually, the more common way is to create an interface, like this:

```
public interface MyConstants{ // Note naming conventions  
    int ID_OK=1; // public static final is implicit in interfaces  
    // etc  
}
```

Then anyone who wishes to use the constants without putting MyConstants before each reference can simply implement the interface.

--

by Gerhard Haring, Jon Skeet

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: Does anyone know what the character limit for a class name would be?

I have my class name in a variable ft and I am doing a Class.forName(ft);

My class name with qualifiers is 44 characters long, I can only imagine that there must be a limit ....

Answer: From the JVM Spec 2 - 4.2

-----

Class and interface names...fully qualified name...as  
CONSTANT\_Utf8\_info.

-----

That structure, CONSTANT\_Utf8\_info, places a limit of 64k on the length. But for a class this is the fully qualified name, so the maximum length of the name could be less.

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## General Java Questions II

 Q: I wonder what happened if I remove "deprecations" from my code, for example `size()` and put `getSize()`.

Don't the programs work any more on older browsers (e.g. IE3)?

Answer: Check the docs to see whether they say "Since 1.1", "Since 1.2" or "Since 1.3" - if so, they will not work in the oldest MS VM.

Keep in mind that Sun's programmers haven't been very good at actually documenting this for all classes and methods.

or directly here:

To check your code against any version of the JRE (1.1, 1.2, 1.3), use JavaPureCheck:

<http://java.sun.com/100percent/>

--

Marco

 Q: How do we exchange data between Java and JavaScript and vice-versa?

Answer: Public variable and methods of Java Applet are visible to a HTML document. So using JavaScript you can access the public variables and public functions.

The syntax is:

```
var some_var = document.appletname.variable_name
```

With this you will get the value of the variable `variable_name` in your JavaScript variable `some_var`.

 Q: Constructors and methods: are they the same?

I need a little help here...I have been teaching that constructors are not methods. This is for several reasons, but mainly because JLS says "constructors are not members" and members are "classes, interfaces, fields, and

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methods."

So, now the rest of the staff is ganging up on me and making life a little nasty. They quote Deitel and Deitel, and Core Java (which references "constructor methods") and who knows how many other books.

The one we are teaching in is loaded with so many errors that even though it calls constructors methods NOBODY will quote it as an authority.

How can so many people call constructors methods if they aren't.

Okay. Are they or aren't they? I holding to the definition that they are not unless it is so common to call them that, that I will have to change.

Comments?

Answer: If you go by the JLS (Java Language Specification) and the Java API (and you should) , then no, constructors are not methods. Consider that `Class.getMethods()` returns an array of `Method` instances and `Class.getConstructors()` returns an array of `Constructor` instances, and `Constructor` and `Method` or not interchangeable (one is not derived from the other), but both implement the `Member` interface. Seems to me that Java is going out of its way to differentiate them.

Besides, the mechanics of constructors are so different from the mechanics of methods, there seems to be no value to considering one a member of the set of the other.

Now, as far as teaching the language goes:

Methods:

- + return types
- + called by name
- + executed multiple times

Constructors:

- + `super(...)` or `this(...)` as first instructor (often implicit)
- everything else

I very much do not like trying to lump the two concepts together, especially in introductory courses. Conceptually they are very, very different things.

A constructor is a unique element (even if there are several). It has the name of the class, its declaration is different, and it doesn't have the same syntax as a method. It plays a unique role. You can call a method from a constructor, but you cannot call a constructor from a method.

I say constructors are distinct from methods, and for students, blurring the distinction will lead to problems.

--

by Chuck McCorvey, Chris Wolfe, Paul Lutus



Q: Simple question: why constructor doesn't work in following example?

```
class Start {
    public void Start() {
        System.out.println("Konstruktor START");
    }
}

public class Test {
    public static void main(String[] args) {
        Start s = new Start();
    }
}
```

Answer: Because you have included the return-type 'void' in the method declaration, it becomes a normal method, that just happens to have the same name as the class - so it won't get used as a constructor. Remove the 'void' and it should work.

--


Vince Bowdren

P.S. by John: If you do not specifically define any constructors, the compiler inserts an invisible zero parameter constructor "behind the scenes". Often this is of only theoretical importance, but the important qualification is that you only get a default zero parameter constructor if you do not create any of your own.


Your program used this zero parameter constructor and you saw nothing...

 Q: Why we can not declare constructor as final ?

Answer: The keyword final when dealing with methods means the method cannot be overridden. Because constructors are never inherited and so will never have the opportunity to be overridden, final would have no meaning to a constructor.

 Q: In Java, does exist a function like sprintf in C ?

Answer: <http://www.efd.lth.se/~d93hb/java/printf/index.html> a free Java version of fprintf(), printf() and sprintf() - hb.format package

 Q: If I declare an array of an objects, say Dogs, is that memory taken when I create the array or when I create the objects in the array when I declare this array:

```
Dog[] dog = new Dog[100];
```

or does it take the memory when I actually create the Dogs in the array eg:

```
for(int i = 0;i<dog.length;i++)dog[i] = new Dog();
```


Answer: The statement above is actually two-fold. It is the declaration and initialisation of the array. Dog[] dog is the declaration, and all this does is declare a variable of type Dog[], currently pointing to null.

You then initialise the array with new Dog[100], which will create 100 elements in the array, all of them referencing null.

It is important to realise that the elements of an array are not actually objects, they only reference objects which exist elsewhere in memory. When you actually create the Dog objects with new Dog(), these objects are created somewhere in memory and the elements in the array now point to these objects.

**Pedant point:**

Nothing ever points to null. It is a constant that represents the value of a reference variable that is not a pointer to some object new Dog[100] creates an array of 100 null Dog references.

 Q: How do I return more than one value using the return command?


Answer: You could make a new object/class that contains these two values and return it. For example:

Define an object like this:

```
class MyObj {  
    public int myInt;  
    public double myDouble;  
}
```

Then, in your method create one of these, set the corresponding values, and return it.

```
MyObj yourMethod() {  
    MyObj obj = new MyObj()  
    obj.myInt = 20;  
    obj.myDouble = 1.0003  
    return obj;  
}
```

 Q: How do I use object serializtion for an object that has other objects as data member? Do both the class need to implement serialize?  
How about static data?

```
class A{
```



```
}  
class B{  
public A a;  
}
```

Answer: Both the object and all the object references it contains need to belong to classes that implement Serializable.

Static and transient fields are not serialized. For more, see,  
<http://java.sun.com/docs/books/tutorial/essential/io/serialization.html>



I recently learned a bit about "inner classes" but this seems to be different...

Q: I'm a bit new to Java programming so bear with me. My employer bought a package of java graphics library programs to support some chart applets we want to create. We have the source code. I'm trying to create a jar file with all the files I need to run the applet. When I currently run the applet, the browser java tool says that it can't find "TextComponent\$1.class". I recently learned a bit about "inner classes" but this seems to be different. The "TextComponent.java" file does contain some inner classes, but not a class called "1". I'm confused. Is this an inner class? Or is it something else. Any help would be appreciated. Thanks...

Answer: The TextComponent\$1.class is the first anonymous class defined in TextComponent.java. Since nested (inner) classes are compiled to their own .class file, they needed unique names. The javac compiler is just creating a unique file name for an anonymous nested class.



Hi there, does anybody know a good source of design patterns written in JAVA ?

Answer: A pretty good (free to download) book.

<http://www.patterndepot.com/put/8/JavaPatterns.htm>



Q: Whats the difference between the two: System.err. and System.out? When should we use System.err?

Answer1: System.out leads the output to the standard output stream (normally mapped to your console screen), System.err leads the output to the standard error stream (by default the console, too). the standard output should be used for regular program output, the standard error for error messages. If you start your console program regularly both message types will appear on your screen.

But you may redirect both streams to different destinations (e.g. files), e.g. if you want to create an error log file where you don't want to be the regular output in.

On an UNIX you may redirect the output as follows:

```
java yourprog.class >output.log 2>error.log
```

this causes your regular output (using System.out) to be stored in output.log and your error messages (using System.err) to be stored in error.log


Answer2: System.err is a "special" pipe that usually is directed to the standard console. You can redirect the System.out with the normal pipe control (| or >), but System.err no. If you want to put both the "normal" output and the "error" output to a file you must use the special redirect 2>.

This allow you to send normal messages into a file or in the /null black hole, but still receive the error messages on the console.



What is the essential difference between an abstract class and an interface? What dictates the choice of one over the other?

Answer: You can only extend one class (abstract or not) whereas you can always implement one or more interfaces. Interfaces are Java's way to support multiple inheritance.

 Does anyone know how could I get the size of an Enumeration object? The API for Enumeration only contains getNext() and next().

Answer 1: You can't. Theoretically, some classes that implement Enumeration may also provide some way to get a size, but you'd have to know about the more specific run-time type and cast to it... and none of the standard java.util Collections classes nor Vector or such provide these methods in their Enumeration implementations.

Answer2:

you can make your own class like this:

```
import java.util.*;

public class MyEnumeration{
    int size;
    int index = 0;
    Enumeration e;

    public MyEnumeration(Vector v){
        size = v.size();
        e = v.elements();
        index = 0;
    }


    public boolean hasMoreElements(){
        return e.hasMoreElements();
    }

    public Object nextElement(){
        index++;
        return e.nextElement();
    }

    public int size(){
        return size;
    }


    public int getIndex(){
        return index;
    }
}
```

--  
by Nicolas Delbing and Victor Vishnyakov

 Is there a way to provide values for a Vector in the source code, analogous to array initializers?

Answer: The Vector class constructors take no arguments other than Collection (since JDK 1.2), which is abstract, and since a Vector is a structure whose size can change dynamically, it's contents can only be initialized through member methods.

--  
Mike Lundy

 How would I add a help file to a java application?

Would it have to be platform specific, or is there a Java api for making help files?  
If so, what is it?

Answer: See JavaHelp at <http://www.javasoft.com/products/javahelp/>

you create HTML pages for the main text, and add some XML files for a hierarchical table of contents and a map from TOC tags to relative URLs giving document locations.



What is a Just-In-Time(JIT) compiler?

Answer: It is a JVM that compiles Java instructions (called bytecode) into native machine instructions at run time and then uses this compiled native code when the corresponding Java code is needed. This eliminates the constant overhead of interpretation which tradition first generation JVM's used.

--

Dave Lee



Is there a collection object like the hashmap or hashtable that stores values in an ordered path? Vector does this but i need the key/value functionality. hashmaps do not guarantee the order of the objects.

Answer: Take a look at java.util.TreeMap.

Red-Black tree based implementation of the SortedMap interface. This class guarantees that the map will be in ascending key order, sorted according to the natural order for the key's class (see Comparable), or by the comparator provided at creation time, depending on which constructor is used.

Note that this implementation is not synchronized. If multiple threads access a map concurrently, and at least one of the threads modifies the map structurally, it must be synchronized externally.



Most people asked why there is an error, but my question is why this is NOT an error

Please take a look:

r is a number and s is a character, why can I put them together to make a comparison without compilation error? Could somebody tell me... thank you

```
double r = 34.5;
char s = 'c';
if (r > s) {
    System.out.println("r > s");
} else {
    System.out.println("r < s");
}
```

Answer: Yes, char is indeed a 16-bit value. However, the actual answer is in the Java Language Specification, section 5.6.2, which is at the following URL:

[http://java.sun.com/docs/books/jls/second\\_edition/html/conversions.doc.html#170983](http://java.sun.com/docs/books/jls/second_edition/html/conversions.doc.html#170983)

In summary, the char is automagically promoted to a double. No explicit cast is necessary since the language rules say that it gets "promoted" to a double  
by John O'Conner



Q: == and equals ()... These two still make me confuse a lot of time.

Can somebody give me some thumb rule or explain it to me?

Answer: When you use == with a primitive -int, double, char, ... you are checking that the values are identical. But if you use == with an object, you are checking that the 2 objects are stored at the same address. In other words the references pointing to the same object...

Method equals () is different.

It is the same as ==, if it isn't overridden by the object class.

Many classes override the method equals (). In this case this method will check that content of the object is the same or not, not addresses.



Q: Why do I get message like "wrong magic number" when I am trying to run applet? What is magic number?

Answer: The first thing a JVM does when it loads a class is check that the first four bytes are (in hex) CA FE BA BE. This is the "magic number" and thats why you are getting that error, you are trying to load a file that isnt a class and so the class loader in the JVM is throwing out that exception.

Make sure you transfer the class files to site in binary mode, rather than text or ASCII mode.

An error from the browser saying "cannot start applet ... bad magic number" usually means that one of the class files on the server is corrupted. '

Replace your class binary files on the web server; clean up the cache of your browser, and reload your applet.



Q: In java, I found a lot of methods, which let you enter a line (read (), readLine () e.c.t). They all wait until return is pressed, and then start providing you the information.

Does anyone know if there is a read method available whit the desired behaviour, i.e. which doesn't wait for return being pressed?

Answer: Java does not provide it, the terminal itself waits until return is pressed before sending the entered line to Java.

You need to use some platform specific mechanism to change the terminal settings.



Q: Can I pass a function as a parameter in Java? If so, how?

Answer: No, you cannot. But you can pass an object with method and then just use this method like this:

```
myFunction (object); // object has method useMyMethod(){ do smth here...}
```

```
..
```

```
..
```

somewhere in another place where use this function..

```
object.useMyMethod();
```



What is difference capacity() and size() methods for vector?

What is difference between

```
public final int capacity()
```

Returns the current capacity of this vector.

and

```
public final int size()
```

Returns the number of components in this vector.

Answer: please read this method: ensureCapacity

```
public final synchronized void ensureCapacity(int minCapacity)
```

Increases the capacity of this vector, if necessary, to ensure that it can hold at least the number of components specified by the minimum capacity argument.

Parameters:

minCapacity - the desired minimum capacity.



What're the differences between classpath and import in the java application?

Do I need to have the package in the classpath first before importing in a java application or need not?

Answer: Classpath is an environment variable of your OS, you have to set it (or better: Java sets it) to tell Java where to search for classes.

You use import in a program to let Java search for the specified classes within the classpath. This implies that the package must be in the classpath.

--

Stephan Effelsberg



Q: What is difference between Iterator and Enumeration?

First of all Java FAQ Team wish you !!!HAPPY NEW YEAR!!! and then

Answer: from <http://java.sun.com/docs/books/tutorial/collections/interfaces/collection.html>

The object returned by the iterator method deserves special mention. It is an Iterator, which is very similar to an Enumeration, but differs in two respects:

Iterator allows the caller to remove elements from the underlying collection during the iteration with well-defined semantics.

Method names have been improved.

The first point is important: There was no safe way to remove elements from a collection while traversing it with an Enumeration. The semantics of this operation were ill-defined, and differed from implementation to implementation.

The Iterator interface is shown below:

```
public interface Iterator {  
    boolean hasNext();  
    Object next();  
    void remove(); // Optional  
}
```

The hasNext method is identical in function to Enumeration.hasMoreElements, and the next method is identical in function to Enumeration.nextElement. The remove method removes from the underlying Collection the last element that was returned by next. The remove method may be called only once per call to next, and throws an exception if this condition is violated. Note that Iterator.remove is the only safe way to modify a collection during iteration; the behavior is unspecified if the underlying collection is modified in any other way while the iteration is in progress.

The following snippet shows you how to use an Iterator to filter a Collection, that is, to traverse the collection, removing every element that does not satisfy some condition:

```
static void filter(Collection c) {  
    for (Iterator i = c.iterator(); i.hasNext(); )  
        if (!cond(i.next()))  
            i.remove();  
}
```

Two things should be kept in mind when looking at this simple piece of code:

The code is polymorphic: it works for any Collection that supports element removal, regardless of implementation. That's how easy it is to write a polymorphic algorithm under the collections framework!

It would have been impossible to write this using Enumeration instead of Iterator, because there's no safe way to remove an element from a collection while traversing it with an Enumeration.



How can I find the first dimension length of the 2-dimensions array? I have use the array[].length but it does not work, how can I solve this problem?

Answer: Java doesn't really have "multidimensional arrays", only arrays of arrays. So try: array[0].length and you will get this dimension.




I guess what I'm asking is "Is java.util.Hashtable thread safe?"



Q: It's been a while since I've used hashtables for anything significant, but I seem to recall the get() and put() methods being synchronized.

The JavaDocs don't reflect this. They simply say that the class Hashtable is synchronized. What can I assume? If several threads access the hashtable at the same time (assuming they are not modifying the same entry), the operations will succeed, right? I guess what I'm asking is "Is java.util.Hashtable thread safe?"

Answer: That is right! It is recommendable, if you have questions like these, always look at source for the API, it's freely available.

 Q: I try to copy an object of my own using the clone() method from java.lang.Object, but this is a protected method so I can't use it. Is there some other way to get my objective of duplicating an arbitrary object?

Answer: If you want to clone your object, you need to make it cloneable. To achieve this, you need to do two things:

1. implement the interface Cloneable
2. override the method clone(), so that it
  - a. becomes public
  - b. calls super.clone()
  - c. if necessary, clones any members, or
  - d. if a member can't be cloned, creates a new instance.

Simple example:

```
public MyClass implements Cloneable {
    int someNumber;
    String someString;

    public Object clone() {
        // primitives and Strings are no
        // problem
        return super.clone();
    }
}
```

In this case the method clone() of the class MyClass returns a new instance of MyClass, where all members have exactly the same value. That means, the object reference 'someString' points to the same object. This is called a shallow copy. In many cases this is no problem. Strings are immutable and you do not need a new copy. But if you need new copies of members, you have to do it in the clone() method. Here is another simple example:

```
public class SomeMember implements Cloneable {
    long someLong;

    public Object clone() {
        return super.clone();
    }
}
```

```
public AnotherClass extends MyClass {
    SomeMember someMember;

    public Object clone() {
        AnotherClass ac = (AnotherClass)(super.clone());
        if (someMember != null) {
            ac.someMember = (SomeMember)(someMember.clone());
        }
        return ac;
    }
}
```

```
}  
}
```

Note that the class `AnotherClass`, that extends `MyClass`, automatically becomes `Cloneable`, because `MyClass` is `Cloneable`.

Also note, that `super.clone()` always returns an `Object` of the type of the actual object, although the superclass doesn't know anything about that sub class. The reason is, that `Object.clone()` is a native method, which just allocates new memory for the new object and copies the bytes to that memory. Native code has it's own ways of finding out which type to return ;-)

--

Karl Schmidt



I was just wondering about the usefulness of Interfaces...

I was just wondering about the usefulness of Interfaces. I was under the impression that interfaces could be used to perform multiple inheritance. But an interface only declares a method - in a very abstract way.

A class that implements an interface needs to define its own implementation of a certain method. What is the use of having an interface when nothing is being gained...?

Answer: If two classes implements the same interface, you can get a reference to the interface instead of the effective class without bother what class are you managing.

This is very useful in RMI (for example) or in any condition when you have to take an object without knowing exactly his class, but only the interface that it implement.

For example:

```
public void recurseList( List l )
```

the generic `List` ensure that you can use every `List` for this method (`ArrayList`, `AbstractList`, `Vector`...), so your calling method can be:

```
ArrayList l = new ArrayList(); or
```

```
Vector l = new Vector();
```

```
recurseList( l );
```

Without any problem.

by Davide Bianchi



Q: I got a problem with an array/vector...

I got a problem with an array/vector.

my class contains a member:

```
static Vector quad[][];
```

```
....
```

in my constructor I got:

```
Vector quad[][] = new Vector[row][col];
```

```
for (int i = 0; i < row; i++){  
    for (int j = 0; j < col; j++){  
        quad[i][j] = new Vector (0,1);  
    }  
}
```

// row and col are int between (10..50) -- it's a big I know, but that might not be the problem

My PROBLEM (and I don't know what to do, really), I can't access `quad[x][y]` outside of the constructor!!!! Within the constructor I've got full access on `quad[x][x]`. Java (1.2) returns a `NullPointerException` on any method

except within the constructor!!!

What's my fault!???

Answer: I guess you shouldn't write Vector here:

```
Vector quad[][] = new Vector[row][col];
```

so, the correct variant may be:

```
quad[][] = new Vector[row][col];
```

I guess You just overridden your static variable with one defined in your constructor:

```
Vector quad[][].
```

Thus, you're initializing NOT your class-scope static variable but your constructor-scope quad. It's not reachable outside the constructor. And as for static quad, it has never been initialized! And a first reference to it causes NullPointerException. I guess. I hope I'm right :)

--

Xao Rom

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## 📁 General Java Questions III



Q: I propose that Java should allow multiple inheritance if...

Everyone knows the potential problem with multiple inheritance is when you run into the problem of having two instances of a grand parent super class.

For example:

```
class A extends D {int i; }
```

```
class B extends D {int i; }
```

```
class C extends A,B { }
```

Potentially, you could have two copies of D for each instance of C.

However, I propose that Java should allow multiple inheritance if there are no instance variables associated with the abstracts that the base class is extending.

```
abstract class A { public setX(); public setY(); public setAll() {setX (); setY(); }
```

```
abstract class B { public setC(); public setD(); public setBoth()  
{setC(); setD(); }
```

```
class C extends A,B { }
```

You won't have two instances of some grandfather class, since A and B doesn't have instances variables.

I hope the next versions of Java explores this issue.

Answer: It does. They're called interfaces:

```
interface A { public void setX(); public void setY(); public void setAll(); }
```

```
interface B { public void setC(); public void setD(); public void setBoth(); }
```

```
interface C extends A,B { }
```

```
public abstract class D implements C {
```

```
}  
  
--  
jim
```



Is there a way to know from class X which class called the method foo()?

If class A and class B are calling a method foo() on class X, is there a way to know from class X which class called the method foo() (they can be either A or B). I know that this can be done by capturing the stack trace and examining it, but that solution looks expensive as I have to create a new Throwable object every time and capture stack trace (And I do this quite frequently).

Is there any other elegant solution to do this, any help and direction is appreciated.

Answer: Pass a reference to the class to the foo() method.

```
foo(Object x){  
    System.out.println(x.getClass());  
}
```

should do it.



Why does this simple application never exit?

```
public class UIQuitTest {  
    public static void main (String[] args) {  
        java.awt.Frame f = new java.awt.Frame();  
        f.dispose();  
        f = null;  
    } // end of main ()  
}
```

The application above never quits, is it a bug or a (mis)feature? Win98, JRE 1.3.0

Answer: By creating an AWT object, you now have started the AWT thread. In order to end the application now, you have to do a System.exit(0) that will kill all non-daemon threads, including the AWT thread.



Q: Is it possible to stop an object from being created during construction?

For example if an error occurs inside the constructor (e.g. the parameters pass in were invalid) and I wanted to stop an object being created would it be possible to return null rather than a reference to a new object. (I know the term return is technically correct in this case but you know what I mean).

Basically, is it possible to cancel object creation?

Answer: Yes, have the constructor throw an exception. Formally, an object \_will\_ be created (since the constructor is a method invoked after the actual method creation), but nothing useful will be returned to the program, and the dead object will be later reclaimed by Garbage Collector.

But the clean way is as another reply suggests, that you leave calls to the constructor to a static factory method which can check the parameters and return null when needed.

Note that a constructor - or any method in general - throwing an exception will not "return null", but will leave the "assign target" as it was.

Tor Iver Wilhelmsen



Q: What does mean "volatile"?

For the past couple of hours, I've seen quite a few set of codes that has the \_volatile\_ keyword.



E.g.

private volatile somethingsomething....

What does it mean?

Answer: See JLS 2nd Edition, which just came out last year, still mentions it.

[http://java.sun.com/docs/books/jls/second\\_edition/html/classes.doc.html#36930](http://java.sun.com/docs/books/jls/second_edition/html/classes.doc.html#36930)

"A field may be declared volatile, in which case a thread must reconcile its working copy of the field with the master copy every time it accesses the variable. Moreover, operations on the master copies of one or more volatile variables on behalf of a thread are performed by the main memory in exactly the order that the thread requested."

Seems just like the idea in C++ and appears still to me present in the language.

Synchronization certainly has its place in many applications, that doesn't mean that volatile is not longer used or part of the language.

--

Paul Hill



Q: If some method is deprecated does it mean that one gets a chance not to find this method in some Java version?

Answer: It means it *may* be dropped in a future version, but chances are it's still there. I'm not sure I've seen any deprecated features actually being removed from an API yet - often they're turned into no-ops first, if they're dangerous.

Jon Skeet - <http://www.pobox.com/~skeet>

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: suppose I put a file a.txt in package com.xyz and then try access it like following. Will it work?

```
import com.xyz.*;
public class Hello{
    File f = new File("a.txt");
    ...
}
```

it is not working for me. Is there any workaround?

Answer: If the source and the text file are in the jar file, then you access the file by:

```
URL fileURL = getClass().getResource("file.txt");
```

You can then read the file by using a reader (or whatever you choose),  
e.g.:

```
_istream = new BufferedReader( new
InputStreamReader(fileURL.openStream()) );
```

--

j o h n e w e b e r

Or, simpler

```
getClass().getResourcesAsStream("file.txt"), but you must be sure that
file is in the same directory ( package ) as your class, otherwise you
need play with getClassLoader().getResourceAsStream( <path>"/file.txt" );
```

--

Oleg



Q: Difference between loading and instantiating a class???

Well, the subject says it all. What is the difference between loading and instantiating a class in a JVM.

Second question: What would happen if at runtime I update a class file? Will the JVM know to use that instead?

Answer: The difference is that when a class is loaded by a ClassLoader it is read in as a stream of bytes, presumably from a file, but it could just as easily be from over the network, and then processed or "cooked" into a representation that the VM can use to make instances of Objects of that classes type. This last part is the instantiation. You can load a class at runtime with:

```
Class.forName("MyClass");
```

and instantiate one with:

```
MyClass mc = Class.forName("MyClass").newInstance();
```

Cool, eh. You don't have to know the name of a class at compile time.

>Second question: What would happen if at runtime I update a class file?

>Will the JVM know to use that instead?

Loaded classes are cached because it's quite costly to do the "cooking" I mentioned above. So it will not be loaded. You may create a separate ClassLoader with new SecureClassLoader but that will cause all classes \_it\_ loads to be loaded from this new ClassLoader but that's not what you want.

I don't know if you can specify that a class should be loaded from disk again using the normal ClassLoader. You could very easily make your own ClassLoader in which case you would have explicit control over such things. Look at java.lang.ClassLoader and java.lang.Class.

--

Michael B. Allen



Q: Why developers should not write programs that call 'sun' packages?

Answer: Java Software supports into the future only classes in java.\* packages, not sun.\* packages. In general, API in sun.\* is subject to change at any time without notice.

A Java program that directly calls into sun.\* packages is not guaranteed to work on all Java-compatible platforms. In fact, such a program is not guaranteed to work even in future versions on the same platform.

For these reasons, there is no documentation available for the sun.\* classes. Platform-independence is one of the great advantages of developing in the Java programming language. Furthermore, Sun and our licensees of Java technology are committed to maintaining backward compatibility of the APIs for future versions of the Java platform. (Except for code that relies on serious bugs that we later fix.) This means that once your program is written, the class files will work in future releases.

For more details, see the article Why Developers Should Not Write Programs That Call 'sun' Packages.

<http://java.sun.com/products/jdk/faq/faq-sun-packages.html>



Q: Can garbage collector remove my singleton?

A usually singleton..

```
public class Single{
    private static Single single;
    private Single {}
    public static Single getInstance(){
        if(single==null){
            single = new Single();
        }
        return single;
    }
}
```

```
}  
}
```

Well,, seems good ?

But classes are objects too...so do Java 2 v1.3 class garbagecollecting? Meaning my singleton could dissappear if i dont keep a reference to it (or the class itself) somewhere ?

If classes is not garbagecollected, that's pretty stupid, I dont want classes taking up memory when i perhaps never will use it again....

Answer: No. Classes can define objects. That is, only the dynamic part of the class defines objects. The static part exists only in one place in memory and can not be duplicated. You can call the getInstance() method from anywhere in your program.

Java requires however that you tell where to find the method, in this case in the Single class.

Therefore, you should use

Single.getInstance()

to get the instance. This is (though it looks much like it) not an execution of a method on an object, but just a method call without object. Single is only used to find out which getInstance() method should be used, and where it is.

You could add a delete() method if you don't need the instance anymore:

```
public class Single{  
    private static Single single;  
    private Single {}  
    public static Single getInstance(){  
        if(single==null)  
            single = new Single();  
        return single;  
    }  
  
    public static delete(){  
        single = null;  
    }  
}
```

The garbage collector can now remove the single object after delete() is called if memory is needed.

--

Rijk-Jan van Haaften

Dept of Computer Science, Utrecht University, The Netherlands

P.S by John:

Doing more deeper investigation of this question I found one very good article about this topic. Everybody who are interested can read full article here:

<http://developer.java.sun.com/developer/technicalArticles/Programming/singletons/>

For the rest of our audience shortly:

A Singleton class can be garbage collected and when

".. a Singleton class is garbage-collected and then reloaded, a new Singleton instance is created. Any class can be garbage-collected when no other object holds reference to the class or its instances. If no object holds a reference to the ' Singleton object, then the Singleton class may disappear, later to be reloaded when the Singleton is again needed. In that case, a new Singleton object will be created. Any static or instance fields saved for the object will be lost and reinitialized.

This problems exists in older Java™ Virtual Machines<sup>1</sup>. JDK 1.2 VMs, in particular, conform to a newer class garbage collection model that forbids any class in a given classloader to be collected until all are unreferenced"

And you "... can also set your VM to have no class garbage collection (-Xnoclassgc on the JRE 1.3, or -noclassgc on the IBM JVM). Keep in mind that if you have a long-running program that frequently reloads classes (perhaps through special class loaders such as the remote class loaders), you have to consider whether that could cause a problematic buildup of garbage classes in the VM."

Also some people asked what is a Singleton and what is relation has it to Java.

Shortly a Singleton is one of classical design patterns that are used in software development. More please read in free book here:

<http://www.patterndepot.com/put/8/JavaPatterns.htm>



Q: I study patterns now and would be lost and forget everything very soon! Help!

I am very new to design patterns and just bought the GoF book to learn about it.

But as I complete the first couple of chapters right away, I see that they have 23 different patterns and I would be lost and forget everything very soon if I sequentially (page by page) read the entire book!.

Do any of you have recommendations on how to proceed with this book so that I 'll remember at least some of them by the time I am done with the book? I can see that many of the classes in java API use composition, facade etc...

But other than that I don't think I 'll be able to gather anything unless I am able to remember where & when to use particular pattern A, B or C...

Answer: Glad to hear you got the GoF book, it's a great reference manual for patterns. As you've found, however, it's a bit heavy to just "read." What I recommend to people is that they pick a few of the easier, more commonly used patterns: Singleton is a no-brainer that pops up a lot. Adapter tends to get used here and there and isn't that difficult to understand. If you're doing Swing, then definitely go learn the Observer pattern. It'll help to keep you from mixing data and interface code. Once you've learned three or four and have used them a few times, then as you start new projects, look back to the text to see if there are opportunities in your project where other patterns can be used.

You'll find that over time you'll use more and more of the patterns (some a lot more than others, obviously). I've often found cases where I missed a pattern during design and had "the light go on" after I'd written a bunch of code and realized I was either using a known pattern by accident, or could have used a pattern to my advantage. When possible, I then go back and adjust the design/code to match the pattern.

Keep in mind that the patterns generally don't appear as "absolute." It's expected that you may have variations to satisfy your application's needs.

It's really helpful to others, however, if you make a quick note in your design doc/code about what pattern you were using (which helps them learn patterns too, and helps them understand what you were up to if they know the pattern already).

--

Rico Trooper



Q: When I used java.util.Hashtable, I also used interface Enumeration. But I found that this interface contains defined methods.

How can an interface contain defined methods? Isn't an interface supposed to hold abstract methods only?

Answer:

> How can an interface contain defined methods?

No.

> Isn't an interface supposed to hold abstract methods only?

Yes. (and fields). I'm not sure why you think Enumeration contains defined methods, since it does not (I checked the source to be sure). Keep in mind that an implementing class is also of type Enumeration. So Hashtable's keys method which returns an Enumeration will actually be returning an inner class that implements Enumeration (and therefore defining hasMoreElements and nextElement in a manner that is specific to traversing a Hashtable).

If this doesn't help, maybe you could clear up what you mean by Enumeration having defined methods.

--

Eric



Q: can anyone provide an example on how to use clone() and clonable interface?

Answer:

//Class Point uses default clone implementation that returns  
//shallow copy of Point (which is sufficient in this case).

```
class Point implements Cloneable {
    int x, y;
}
class ImmutableRectangle {
    private Point lowerLeft = new Point();
    private Point upperRight = new Point();
    public Point getLowerLeftPoint() {
        try {
            return lowerLeft.clone();
        }
        catch(CloneNotSupportedException e) {
            //shouldn't occur since Point is cloneable
            throw new InternalError();
        }
    }
}
```

we don't want Rectangle points to be changed outside its class. the best way would be to create a copy of Point object and pass it.

i5mast

MVP for Java 2

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## General Java Questions IV

 Q: I am looking for more efficient compression APIs esp. for \*.doc and \*.html files.

I need some Java APIs wherein I can implement various compression algorithms. I have already the GZIP compression technique shipped with JDK's java.util.zip package. I am looking for more efficient compression APIs esp. for \*.doc and \*.html files.

Answer: You often get better compression results for a large number of smaller files by concatenating the uncompressed files and then compressing the result. That's why tar.gz is often superior to zip for large numbers of html files (like API docs).

You will not get much better general-purpose compression than Zip, at least not until you have a specific class of data and know very much about its structure. Even then you'll need some experience and time working on a better compression method.


You might want to take a look at this Java implementation of bzip2:

<http://www.aftexsw.com/aftex/products/java/bzip/>

It uses more CPU cycles and memory but typically compresses better than zip.

--

Marco

 Q: I need to programmatically replace an entry in a zip file.

I could not quite get it using the ZipOutputStream because it simply creates a new file and write only that entry for me. The rest of the original entries are gone.

Does anyone have a solution for this?

Answer:

- 1) Read the file (myfile.properties) out of the original Zip Archive (original.zip)
- 2) Make your changes, write the file to the file system
- 3) Create a New Archive (originalNew.zip)
- 4) Write your edited file (myfile.properties) to originalNew.zip
- 5) loop through all the entries in the original Zip archive (original.zip), adding them to the new archive (originalNew.zip) EXCEPT for the file you are replacing (myfile.properties)
- 6) When you're done, erase the original and rename your new one to original.zip.

I believe that this may be the only way to do this, since there doesn't seem to be any random access in the ZIP file.

--

Kevin T. Smith



Q: About the order of my elements in hashtable...

I save some data into hashtable.

For example,

```
hashtable.put ( "1", "one" );  
hashtable.put ( "2", "two" );  
hashtable.put ( "3", "three" );
```

when I get back the element from hashtable using Enumeration class ,

```
Enumeration e = hashtable.keys();
```

```
while ( e.hasMoreElements() ){
```

```
    Object k = e.nextElement();
```

```
    Object v = hashtable.get (k);
```

```
}
```

the default result is

"3", "three"

"2", "two"

"1", "one"

here I want to get the data sorted as ascending. ( the order as I insert ) such as

"1", "one"

"2", "two"

"3", "three"

or is it possible to get the data from end of hashtable?

Answer: When you insert elements into a Hashtable, they will not be stored in the order you insert them. They are stored in a way that makes it easy to find them by the key you specify.

So, you must either use another data structure (e.g. Vector) or sort them after you retrieve them from the Hashtable (e.g. by using java.util.Collections, java.util.Arrays).

--

Marco Schmidt



Q: What is better to use: array or vector?

Just wondering as I am using Vectors to store large amounts of objects from 50 to 4000 and each one has to be "looked at" every time paint is called...

Just wondering if it would be better to use an array, list etc?

Answer 1: Since the Vector method uses an array for storage but has extra steps involved in getting an element, use an array for fastest access.

--

WBB Java Cert mock exams <http://www.lanw.com/java/javacert/>

Answer 2: arrays are faster, vectors are more dynamic.

This should be evident just looking at the amount of code you need to traverse one versus the other. It might also be beneficial to write a linkedlist class and use that. That way you have a dynamic container which has potential to be faster than a vector (though still not as fast as an array). The problem with arrays is that if you need more space than the current size, you have to hardcode their copying into a bigger array.

Conversely, if you never (or rarely) use the entire array, it's a waste of space and memory.

The following are benchmark test results of vector vs. array (ran on a 200-Mhz Pentium w/ 96 Mbytes of memory)

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

and Windows95 ):

Allocating vector elements: 17910 milliseconds  
Allocating array elements: 4220 milliseconds  
Accessing Vector elements: 18130 milliseconds  
Accessing array elements: 10110 milliseconds

One other reason for vectors being slower that I did not mention above is that vector methods are synchronized, which creates a performance bottleneck.

Hope this helps

--

MSW



Q: Would anyone know the performance issues regarding Vector's?

I am actually talking about resource pooling. I have objects that wait in a queue. It is a vector that keeps growing, as the queue gets bigger.

Do Vectors have much performance hit? Is there a better way to implement vectors to get the best out of them? Or am I better off creating a fixed size array?

Answer 1:

If you just want a LIFO or LILO queue, you may be better off with LinkedList than with Vector, as then you'll never have to wait for the contents to be copied.

Vectors perform pretty well, but if you know (even roughly) how big you're going to need it to be, specifying that in the constructor call can help.

How sure are you that this will be a performance bottleneck? Premature optimisation is the root of all evil...

The Vector class is thread-safe. By that I mean that there is no way to corrupt the internal representation of the data by accessing the vector from more than one thread. However, it is still possible, very easy in fact, to use a vector in a way that is not thread safe.

Consider this code:

```
for (int i = 0; i < vector.size(); i++) {  
    System.out.println(vector.elementAt(i));  
}
```

It looks safe, but there's a subtle flaw...

Answer 2: Suppose you start with a vector of ten elements. On the tenth iteration *i* will have the value 9 and the test *i* < vector.size() will succeed.

Now suppose the thread scheduler chooses this moment to pause the current thread and let another thread run. This second thread removes an object from the vector. Now when the first thread resumes, the vector has only nine elements and 9 is no longer a valid index.

The elementAt() method will fail mysteriously with an ArrayIndexOutOfBoundsException. The thing you must realize is that although the size() and elementAt() methods are both thread-safe, using them together this way isn't.

The vector's synchronization lock is released between the two calls that give the second thread a chance to modify the data. The solution is to lock the vector for the entire loop like this:

```
synchronized (vector) {  
    for (int i = 0; i < vector.size(); i++) {  
        System.out.println(vector.elementAt(i));  
    }  
}
```

Now if another threads attempt to modify the vector while the loop is executing, it will be forced to wait until the loop ends and the vector's lock is released.

--

John Skeet, Mike

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: How do I copy one array to another?

Given that I have an byte array defined like this:

```
byte byteSmall = new byte[23];
```

and another larger byte array defined like this:

```
byte byteBig = new byte[30];
```

How do I copy byteSmall into byteBig starting at index 7 without a for loop like this:

```
for(int i = 0; i < 23; i++){  
    byteBig[i + 7] = byteSmall;  
}  
?
```

Answer: See System.arraycopy:

"Copies an array from the specified source array, beginning at the specified position, to the specified position of the destination array. A subsequence of array components are copied from the source array referenced by src to the destination array referenced by dst. The number of components copied is equal to the length argument. The components at positions srcOffset through srcOffset+length-1 in the source array are copied into positions dstOffset through dstOffset+length-1, respectively, of the destination array.

If the src and dst arguments refer to the same array object, then the copying is performed as if the components at positions srcOffset through srcOffset+length-1 were first copied to a temporary array with length components and then the contents of the temporary array were copied into positions dstOffset through dstOffset+length-1 of the argument array."



Q: More about Robot! I met with a problem in using class Robot.mousePress...

The compiling process is successful. But when I run it, I receive "IllegalArgumentException: Invalid combination of button flags". I don't quit understand this information. Part of my code is as following:

```
Robot rMouse=new Robot();  
int button=1;  
rMouse.mousePress(button);  
rMouse.mouseRelease(button);
```

I am really confused. Will you please give me some advice? Thank you in advance!

Answer: You are not using a valid value for the argument to the mousePress() and mouseRelease() methods. If you check the API documentation, you'll find the valid values are a combination of one or more of the following constants:

```
InputEvent.BUTTON1_MASK  
InputEvent.BUTTON2_MASK  
InputEvent.BUTTON3_MASK
```

plus others which represent the Ctrl, Alt, and Shift keys. To press the left mouse button, you want to use:

```
rMouse.mousePress(InputEvent.BUTTON1_MASK);
```

--

Lee Weiner



Q: In what situation an exception has to be caught otherwise the compiler will complain?

e.g. IOException does NOT have to be explicitly caught, however, SQLException has to be caught otherwise VisalAge will not compile the program.

Answer: The only unchecked exceptions in Java are RuntimeException and its subclasses. This includes such familiar classes as NullPointerException, ClassCastException, and IndexOutOfBoundsException.

IOException is not one of these, and \*does\* have to be explicitly caught or thrown

--

jeff\_robertson



Q: Is it possible to use switch with range of values?

Ex:

```
switch (iBegins){  
    case 2 to 10:  
}
```

Answer:

not exactly like this but:

```
switch (iBegins){  
    case 2:  
    case 3:  
    case 4:  
    case 5:  
    case 6:  
    case 7:  
    case 8:  
    case 9:  
    case 10:  
        /* do stuff */  
        break;  
    case 11:  
        /* other stuff */  
}
```

Jan Schaumann <<http://www.netmeister.org>>



Q: Is there a general reason why nullpointer exceptions occur?

Answer: Of course there is. A NullPointerException happens when you have a reference, it's set to null (or is a class or instance variable and has never been initialized), and you try to perform some operation on the object it points to. Since it really doesn't point to an object, you can't do that.

--

Chris Smith



Q: I am aware that the exceptions in the catch statements must be of the same type or a super type of the exception thrown in the try block.

My question is this:

Is there any significance in the ordering of the catch statements after a try block?

Answer: It is required to design you catch statement sequences with most derived exception class type first and progressing to the highest superclass. Else, the code will not compile.

For a obvious reason, if the a catch block for a given class precedes a catch block for a type that is derived from the first, the second catch block will never be executed.

--

D. Michael Nelson



Q: I wrote a program that use a few RS232 ports. The operators are unskilled and often start multiple instances of the program. Will someone please be so kind and tell me how I can prevent them doing it?



Answer 1: The first instance might write a file. Subsequent instances could check for the existence of that file, or else check it's contents.

Another method could involve creating a server socket on a specific port. Subsequent efforts to create a socket on that same port would throw an exception.

Answer 2: Actually a better way is to (on launch):

- 1) Check if the file exists. If not, create it, open it and run. Leave it open until you quit, upon which time you close it.
- 2) If the file `_does_` exist, try to delete it. If the delete fails, then someone else has it open, which means another copy of your app is running. Inform the user and quit.
- 3) If you succeeded in deleting it, then you are the first. Now create, open and run.

Doing the above prevents the problem of having the semaphore file left around when the system crashes. I implemented it recently in one of our apps, and it works like a charm.

--

Burt Johnson  
MindStorm Productions, Inc.  
<http://www.mindstorm-inc.com>



Q: Can you call a class static abstract method from an abstract class or does it need to be extended and then called from its concrete class?

I've been told that abstract classes do not actually have any code in them cause they are like a placeholder, so I guess you wouldn't bother calling a static method in an abstract class cause it wouldn't have any code to begin with....?

Answer: You have been told wrong. Abstract classes can and do have code in them.

See, for example, `java.awt.Component`, an abstract class with a lot of code and no abstract methods at all. If a class has any abstract method member, directly declared or inherited, it is required to be declared abstract. If not, it is the programmer's decision and should be based on whether it would make sense to have an instance of that class.

Perhaps whoever told you was confusing abstract classes with interfaces, which don't contain implementation, only abstract method and constant declarations.

You cannot declare a method to be both static and abstract. Abstract requires the method to be overridden before you can have a concrete class, static prevents overriding. You can have a static method in an abstract class - such a method could be called without creating an instance of the class, the only thing that is prohibited for abstract classes.

And when a subclass of an abstract method has been instantiated, all the methods from the original class will keep the same code in the instance. Most of the time an abstract class will have abstract methods. However, there are several examples of abstract classes that don't have any abstract methods at all. Some examples are `Component` and `FontMetrics` from the AWT. It doesn't make sense to have just a `Component` that's not a specific type of component. It doesn't make sense to have a `FontMetrics` that doesn't measure any specific kind of Font.

Also being abstract never prevents overriding, it just requires overriding in order to derive a non-abstract subclass. And if a class is a subclass of an abstract class, it only **MUST** override those methods declared abstract. The other methods do not require overriding.



Q: I write java about 2 years, but I still confuse one thing that is why should we use interface???

If I need to implement an interface and just use its every methods name.

Why shouldn't just write every methods statments in a class, not in interface??

I only can think about that if I extend a class, than can implement another or the others interface.

As you can saw, I really confuse about this. And I do see many books for the reasons , but I can't get the answer, please tell me !

Answer: "Interface" is the Java way to do multiple inheritance, or a better way to think of it is as a way to design plug-ins.

For example, let's say we have an application that monitors a network of computers. Our monitors might check for web pages, or they may check for other ports, or they may have hooks for hardware checks.

The interface to our main control panel is always the same: We need some means to poll the monitor object for an answer. This is the "NetworkMonitor" interface and all network monitors will share this interface, but they may have a class hierarchy that is very different, for example, port-monitors may all fork a thread that periodically checks whereas our control panel interface just asks for the most recent answer; hardware monitors may ask for their data in real-time or over RPC and thus have no need of inheriting from Thread.

Because they share the same Interface definition, the control panel application does not need to know if they are polling monitors or real-time monitors because, from the control panel's point of view, it does not matter

--

...

P.S. by John

Also interfaces make our life (I mean programmers) much easier.

Imagine a big project (a lot of programmers, many packages, thousands of files): it is impossible all the time to be aware about particular implementation of some method in specific class in another package!

Much easier to define interfaces between packages as some kind of bridges or gates into another package and their functionality, with hidden (for us) implementation. We just know interface and method names. It is enough to use those methods.

How it is implemented there does no matter... It is working!



Q: Is a static variables value likely to be garbage collected once objects of the class are no longer pointing to it? Does it destroy itself at any point or must that be done explicitly?

I have a class with a static variable I create two instances of this class.

In each instance I modify the static variable. Then I destroy the objects (point them to null), then create another instance of the same class and reference the static variable.

Answer: No - the static variables are effectively linked to the Class object rather than any instances; they will only be garbage collected when the Class is garbage collected. This will only happen if the ClassLoader which loaded the Class is garbage collected.

--

Jon Skeet

<http://www.pobox.com/~skeet>

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



Q: I find such function, but in Class class. Is it possible to use it (or something like this) in another class? Exactly I would like call: `super.super.method1()`;

Answer: No, you can only access methods of your direct ancestor. The only way to do this is by using reflection:

```
import java.lang.reflect.*;
```

```
Class superduper = this.getClass().
```

```
getSuperClass().
```

```
getSuperClass();
```

```
Method ssMethod = superduper.getMethod("method1",null);
```


```
ssMethod.invoke(this,null);
```

(I didn't check the exact syntax and parameters of the above code.)

However the necessity to skip a hierarchy shows that there is something wrong with the design of your application. You should fix this instead of using dirty tricks like the above.

---

Q: If anybody can provide some tips on how to design this smartly...


 Q: I am facing a problem that might sound common to you all. I have to write a switch statement with 40 case statement. I am wondering if there can be some way to reduce this. If anybody can provide some tips on how to design this smartly. :)

Answer: The alternatives are:

an array you index into to get values or delegates.  
an array you binary search.

--

Roedy Green

 Q: I want to use some java variables , across multiple java files. Is there some thing like a "extern in C" in java ??

Answer: If you want to share constants, the usual way is to create a class like this:

```
public class My_Constants {  
    public static final int ID_OK = 1;  
    public static final int ID_CANCEL = 2;  
  
    public static final String MSG_OK = "Okay.";  
    public static final String MSG_ERROR = "An error occurred.";  
}
```

If you want to share a single object instance across your application, use the Singleton pattern.  
Actually, the more common way is to create an interface, like this:

```
public interface MyConstants{ // Note naming conventions  
    int ID_OK=1; // public static final is implicit in interfaces  
    // etc  
}
```

Then anyone who wishes to use the constants without putting MyConstants before each reference can simply implement the interface.

--

by Gerhard Haring, Jon Skeet

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)

 Q: Does anyone know what the character limit for a class name would be?

I have my class name in a variable ft and I am doing a Class.forName(ft);

My class name with qualifiers is 44 characters long, I can only imagine that there must be a limit ....

Answer: From the JVM Spec 2 - 4.2

-----

Class and interface names...fully qualified name...as  
CONSTANT\_Utf8\_info.

-----

That structure, CONSTANT\_Utf8\_info, places a limit of 64k on the length. But for a class this is the fully qualified name, so the maximum length of the name could be less.

--

jschell

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 Job, fun, other...



Q: Hi, I am learning java and hoping to take the certification test this april. How important is it to gain this certification? And would employers be interested?

Answer:

1. Look at the job ads... do they ask for it?
2. If you are an interviewer with two identical candidates, but one had this. Who would you employ?



Q: ...However I am having a difficult time finding a job.

I have been studying Java since November and passed the SCJP a few weeks ago. However I am having a difficult time finding a job. I have found that most of the positions require a good deal of experience first. Also, even the entry level positions have not responded to my resume.

Two questions:

Any ideas on how I can make it look better?  
and even more importantly,  
What should I begin learning next?

(There are so many advanced concepts, JavaBeans, Swing, JSP, EJB etc...that I am a little lost)

Answer 1: I graduated with a bachelor's degree in college just a few months ago and I am currently working for a company that uses Java quite heavily. I was lucky that I got onto the staff that I am, but it wasn't all luck. Companies are looking for people who can not only program, but also communicate well and find the answers to questions on their own. Personally, if I were an employer that saw you completed the tests on your own, that would tell me that you have self-motivation and the yearn to learn: a definite plus considering how fast technology changes.

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)



Bottom line is this: getting a job is tough, no matter what level experience you have. The main thing to keep in mind is that time is on your side. Your patience will win in the end.

--

by RyanDecker

Answer 2: Try with different government institutes (i.e. local, municipal, federal) when you are first starting out. Usually the more experienced programmers in the government go to the private industries after a few years and the government is looking for people to replace the ones who have left and this is usually a good place to start. I hope this helps. Good luck in your search.

--

Robert



Q: I would like to know if the small programs that are attached in mail (like the small games for example) are usually coded in java or in any other language?

Answer: Usually not. Usually they're viruses.

--

Nils O. SelÅsdal



Q: An ordinary guy of ordinary intelligence, with some experience of html, do I stand a chance of learning java or do I need to be of an above average genius.

Any feedback would be welcome!

Answer: Java is extremely easy to learn...but will take a lifetime to be a master. Intelligence is not an issue.

--

drichard\_007

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## Miscellaneous I



Q: What is the difference between Java and Microsoft Visual J++? Is there any specific difference? Please explain me I am novice to this field  
Part1

Answer: VJ++ was designed as a "spoiler" product -- Microsoft created some deliberate subtle incompatibilities so that when people wrote VJ++ code it would only run on Windows. This is not my opinion. This came out in evidence in Microsoft's trial for anti-competitive behavior.

In email they said things like they were going to "pollute" Java, and "piss on" the Swing libraries.

Some of the incompatibilities were in removing some standard fields from the system libraries. Others were adding some fields. They also added some differences to the language itself, in the way event handlers were registered.

When Sun found out about Microsoft's attempt at sabotage, they cut-off all code deliveries to Microsoft, and sued Microsoft. That lawsuit just ended with the payment of \$20M by Microsoft to Sun.

So Microsoft VJ++ is several releases out of date, and does not have many of the most important libraries, such as RMI and beans.

Bottom line: even though it has a nice GUI IDE, if you want to program in Java, you are better off avoiding VJ++, and using any of the free IDEs mentioned in the Java FAQ.

by Peter van der Linden <http://www.afu.com>

P.S by John: please read second part of this tip tomorrow and you will see you can use it with JDK1.3!



Q: What is the difference between Java and Microsoft Visual J++? Is there any specific difference? Please explain me I am novice to this field Part2

Answer 2: Microsoft Visual J++ is a Java IDE for editing, compiling, and debugging Java source code. It also provides GUI editing tools that generate code for you.

Visual J++ added some extensions to the pure Java language that you can easily disable.

The latest version of Visual J++ is 6.0. It supports JDK 1.1.

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

In order to use JDK 1.2, JDK 1.3, or beyond you must follow the procedure below:

Modify the CLASSPATH in the registry. Run RegEdit.exe and locate the following key:

HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Java VM

and modify the CLASSPATH string to include the rt.jar file from you JDK distribution. For example:

c:\Program Files\JavaSoft\JRE\1.3\lib\rt.jar

needs to be added to the end of the CLASSPATH string, and don't forget the semi-colon separating each entry in the string. Also note the "." at the end of the CLASSPATH string.

--

Roger L. Cauvin

rcauvin@homemail.com

<http://www.thegym.net/rcauvin>



How to set the default memory limit of java virtual machine in a java application?

Answer1: java -Xms16m -Xmx32m MainClassName

here: -Xms16m => 16meg initial memory allocation

-Xmx32m => 32meg max memory allocation

Answer2: Run your Java program with -mx<number> switch like this:

java -mx128m ClassName

This for example will set maximum memory allocation pool to 128MB



Do the classes in java.util.zip handle password-encrypted zip files? I've looked through the API, and I don't see any mention of it.

Answer: No, they don't. But Zip's built-in encryption isn't safe anyway by today's standards.



How do I make java application instalable? Q: I have written a Java application and have the .class files in one location. How do I make it installable? Is it possible to convert it to an executable file?

Answer1: just create a batchfile or a .sc file (if on unix)

Answer2: Or check <http://installshield.com/>

They have special edition for Java which lets to write additional interface for configuring of program parameters during instalation.



I need to know how to run Multiple JVMs on one machine. As far as I know if I run 2 different Java Programs on one machine at the same time, both of these programs use the SAME JVM. Is this statement right?

Answer: NO!. Each invocation of the 'java' command creates a new and separate JVM, at least in those JVMs based on the Sun code, and getting them to cooperate on a shared Java task is not automatic, and definitely non-trivial.



I am totally confused about the differences between the SDK, JDK and IDE products

I am brand new to the world of Java and am most interested in learning the language. However, I am confused about the differences between the SDK, JDK and IDE products. I have gone to the Sun site and even some of the IDE vendor sites and I have yet to find something that tells me what the differences are between the three and which of the three I need to program in Java.

I want to program using some form of IDE but do I need to separately download and install a SDK and/or JDK? Sun needs to improve their documentation for us new to the Java environment.

Answer1: IDE is an acronym for Integrated Development Environment. These products are the one stop shops for coding, running and debugging your code. Often these will include GUI based drag and drop form designers and "wizards" for the shells of common forms of code (Application, Applet, etc.) JBuilder is an IDE.

The IDE may stand on its own, or it may act as a front end for a JDK.

JDK is Java Design Kit. A JDK is a command line based interface to the JVM, plus the classes. You are responsible for your own editors, creating code for GUI elements, and all code. All of the IDE's I have reviewed personally come with JDK or their own vendor's equivalent (JVM and class libraries). Some IDE's are capable of a sort of "upgrading" by downloading the latest JDK from Sun (JBuilder for example).

Answer2: If you want to write a Java program using any editor and not an IDE then you would want to download the JDK. It will let you compile and run Java programs from the command line (like a DOS window). JDK stands for Java Development Kit and SDK stands for Standard Development Kit.

Java comes in three versions - Standard, Enterprise, and Micro editions. JDK could be any one of the three. SDK is the standard one - this is the one most people use. If you want an IDE they typically come with a JDK so all you would need to do there is download the IDE and start using it.



How does a java application stored within a jar file reference/edit/read other files ( like .txt, or data files,) that are also within the jar file?

Answer: Classes located in a JAR archive are loaded via a class loader whose purpose is to load classes from JAR archives. This ClassLoader implements the getResource and getResourceAsStream methods to retrieve files from the JAR file. So you can take any class from the JAR and say `ClassName.class.getClassLoader().getResource("fname");` to get the resource and use it.



I want to keep my java GUI always on the top of any other desktop application. Any idea?

I want to keep my java GUI always on the top of any other desktop application. Any idea?

Answer: Spawn a thread that knows about the parent Window, and every X milliseconds, executes the `toFront()` command of that window. Just remember to execute it using `SwingUtilities.invokeLater()`, and don't let your users launch two apps, unless you enjoy screen lockup.



Can a java application be run of a CD without installing anything (i.e. runtime, etc) on the target computer?

I would like to put my application and hand it out as a demo, but I want to make it easy to view.

Answer1: by [Dale King](#) The JRE was made so that it didn't need to be "installed". What I did in one case was to simply put the JRE into a jre folder in the same directory as my application then invoke it from that directory using:

```
jre\bin\jre.exe -cp MyJar.java MyClass
```

That was for JDK1.1 and you have to modify it slightly for Java 2. But this did not require any installation of environment variables to be set up. The JRE was smart enough to know how to get to its system classes relative to where the jre.exe file was located.

Answer2: you could try a Java to native compiler.



I would like to know whether it is possible to test the memory, so as to avoid the `OutOfMemoryError` or whether it is possible to increase the amount of memory in the JVM.

Answer: You can get the total and available memory used by the VM by making two calls from the Runtime class:

```
Runtime runtime = Runtime.getRuntime();  
long free = runtime.freeMemory(); //the available memory  
long total = runtime.totalMemory(); // the total for the JVM
```

The amount returned by totalMemory() isn't that useful unless you specify how much memory your program will have from the beginning (if you don't, the JVM will just keep grabbing more until you run out).

You can set the initial and maximum memory from the command line:

```
java -Xms64m -Xmx64m name.of.Application
```

This will start your application with 64 megs initial and maximum memory.

--

Corey Wineman



What needs to be done to reduce size of a jar file? What optimization techniques to use on classes inside the jar file? What tools if any?

Answer: A JAR file is a ZIP archive. You can influence its size by choosing the degree of compression you want to have. This is usually defined by a value between 0 (no compression) and 9 (maximum compression).

Although JAR tool does not list a -9 switch, you might want to create compressed JARs with any ZIP tool like Winzip or the free Info-ZIP zip command line tool.

The amount of reduction you get totally depends on the nature of your data.

Note that if you use compression in your JAR file, loading goes slower (classes must be decompressed).



Q: Is there any way to run code after the VM has been instructed to exit?

Answer: In 1.3, you can use Runtime.addShutdownHook(Thread hook)



Q: Where can I find Java --> Native code compilers?

Answer: We just published a list of Java products that lets you do

Java --> Native code compilation:

<http://javafaq.nu/java/staff/staff.shtml>



I have a directory having class files arranged in package hierarchy. How can I make the executable of this whole directory?

Any application available for that in Windows NT environment.

Answer: Make a JAR file out of it and add a manifest file that indicates which main() method of which class must be called.

Double-clicking this JAR file will run your application.



Q: I'm interested in writing a little mp3 player in Java...

I'm interested in writing a little mp3 player in java. I have an entirely different app right now that plays sound (wav files), and I substituted an mp3 file for one of the waves but it didn't work. Can anyone tell me if java even supports mp3 files?

Answer: Go to the "Products & APIs" section of [java.sun.com](http://java.sun.com) and look for JMF (Java Media Framework). It's a library that also supports reading MP3 files.



Q: Are there any tools out there that will convert a program written in C to JAVA?

Answer: Yes.

C2J: <http://www.novosoft-us.com/NS2B.nsf/w1/C2J>

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)



C2J has successfully compiled itself as well as programs such as PGP and YACC. Obviously YMMV.

Based on C2J is a C++ to Java tool: <http://sol.pace.edu/~tilevich/c2j.html>

--

jim



Q: Can we create DLLs in java??? if yes How???

Answer: Unfortunately it is impossible. DLL stands for Dynamic Linking Library and has definite structure inside. DLL is a part of executable code and helps to make an application for Windows to be more smaller. And more flexible. It is something like classes but compiled (Java class files are byte codes and JDK compiles them during the runtime...).

In Java it is not possible to make an executable code. But with third party software Yes!

See native compilers on our site.

But I didn't hear about creating DLLs.

So my answer is: in Java it is not possible, but with third party applications it is possible theoretically. Although I do not know any compilers that produce DLLs there is no limitations to do that....

--

John



Can someone tell me the difference between the JRE that comes with the J2SDK and the stand-alone JRE?

Can someone tell me the difference between the JRE that comes with the J2SDK and the stand-alone JRE? When should I use which? I read the sun's web page and they said the the JRE stand-alone package is for shipping your application, it doesn't come with a compiler nor debugger, but what does it really mean?

Answer: Exactly that. The Java 2 SDK (aka JDK) is the JRE plus the compiler (javac) and debugger (jdb). The JRE is entirely sufficient to run a Java application (with a couple exceptions in situations where you call into the compiler or some such). It's entirely redistributable with your Java application if you've written an app in Java intended for an audience that may not have the JRE installed.

--

Chris Smith



Q: Does anyone know of a java machine that will run from a 1.44Mb Floppy? I have an application I want to run from a dos 7.1 floppy disk.

Answer: please check here:

<http://www.transvirtual.com/kaffe-features.htm>

there is written:

"Efficiency is not just about execution speed, but Kaffe's JIT is quite speedy: it runs Java code only 30% slower than plain C. Such things as memory consumption of a JIT-enabled, graphical Kaffe are also important.

Here we can execute a full system on a 4 MB DOS system, and the VM and library footprint won't exceed 1 MB. Our complete source tree fits on a single 1.4 MB floppy.

This is what we mean by "efficiency".

Good enough for you?



Q: Anybody know a good tool to distribute your made java classes with for windows platforms?


I want to create a setup file that also verifies existence of java runtimes etc etc and creates a shortcut and that kinda things...I tried looking into Wise installation systems and Installshield asswel, but they are both not really build for this kinda things...

Answer: You should try, InstallAnywhere by ZeroG (<http://www.zerog.com>)

ZeroG has a free version call, "InstallAnywhere NOW". You should give it a try, its a really easy-to-use java

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

installer. It has all the features you need, such as creating an Icon on your desktop, creating a folder under the Windows "Start" button, it can be set to have the user search for a JVM on their computer, and much much more... (I sound like a commercial, hehehe)  
JHig310336

 Q: Heap size limit!! I am running JVM from JDK 1.2 on Solaris 2.7 and I couldn't allocate the max heapsize over 2G when I invoke the JVM.

I have repetitive tasks that take 500m memory each to run, so I naturally want to run as many threads as possible. I figured out this 2G (-mx2047m) limit by trial and error but is there any way out of this? My workstation happen to have 2G physical memory, and the file size limit is 2G as well (from ulimit), are there any co-relation among those numbers?

Answer: Yes, there is a relation: both result from limiting addressing space to what you can get with signed 32-bit ints for addresses:

$2^{31} - 1 = 2 * 2^{30} - 1 = 2 * 1 \text{ GB} - 1 = 2 \text{ GB}$

One of the interesting features of Java, is you could run the code with 64 bit addresses, and nothing would need to change in either the source code or the class files. The only difference would be you could hold a lot more objects and stack frames before you blew virtual RAM.

Obviously you would need a different JVM or Hotspot.


Java never lets you discover how big references really are inside or how they are implemented, e.g. as pointers or as handles, or even the granularity of the addressability of your machine.

On a 32-bit OS it is a little hard to get 32+ bit memory space. How about you try a 64-bit Solaris 8?

answered by Michiel,

Roedy Green, JAVA GLOSSARY see <http://www.mindprod.com/jgloss.html>

and Johnny Bravo

 Q: How can I format a diskette using Java? And, what's the way to get the diskette's size?

Answer: As far as I know: no. Formatting a disk is strongly system dependant, so you can hardly do this with java.

You \*can\* however start a new process, have it open a shell or any other kind of command processor your particular operating system uses, and issue the format command.


> And, what's the way to get the

> diskette's size?

Again system dependant.

--

Ansgar W. Konermann

 Q: I am a 17 year old in the JDK version 1.1 . Is it worth upgrading and getting a later package, and learning swing?

If so, why?

Answer: Yes.

Java 1.3 provides many performance improvements and library additions which will make your life as a programmer easier.

Swing is "better" than the AWT in that because it is mostly written in Java - it has the advantage of the same look-and-feel across different platforms (which the AWT was crap at). The reference of the other learned poster to a mainframe is the common argument that Swing is slow. This \_is\_ true, however only if you build large applications and I doubt that at the moment you will.

In the future you also have the option of compiling your Swing classes to native code (viewed as a venerable evil by some some, but a practical solution by others) or performing other optimisation tricks that will see your GUI

apps not only looking great and being cross-platform, but also performing well. It's what we call in the trade a no-brainer. Time to get Swinging young chap.

--  
pip



Q: Is it possible to create a Jar file that is not unjarable?

Or only unjarable on a certain domain/server? Is the jar.exe JDK-specific (I don't believe so)? Was I just asleep at the command line and imagining the whole thing?

Answer: You could conceivably encrypt a jar with a password, but you wouldn't be able to start the application from that jar. You could have another jar that actually knows how to decrypt it and creates its own decrypting class loader. Of course your startup jar could be hacked allowing someone to figure out how to decrypt the jar. So once again, you can slow down the process and make it more painful but you can't make it impossible.

To make this workable it would probably be a lot easier to encrypt the files within the jar rather than the jar itself, since you need random access to the jar file, but only sequential access to the files within. It is more difficult to write a good random access encryption scheme. This would allow you to unjar the files, but the files would be unintelligible. You might also apply a cipher to the file names in the jar so someone would not know whether a file was a class or a resource file.

--  
Dale King



Q: How does the system find the path to JDK 1.2 after I type in "java -version"?

I installed the jdk1.2 on a NT system, also VisualCafe4.1 with jdk1.3 was installed on the same system. After typing in "java -version" in a DOS window, I always see java.exe 1.2 is invoked even though I couldn't find the path to JDK 1.2 from the system environment parameters. How does the system find the path to JDK 1.2 after I type in "java -version"?

The reason I ask this question because I want to invoke jdk1.3 under a DOS window without uninstall jdk1.2. I did add a path to jdk1.3 in system environment and reboot the system, but JDK 1.2's java.exe was still invoked after typing in "java -version" in a DOS window.

Answer: Because when the JDK install kit placed the two programs java.exe and javaw.exe in the WINDIR and that's in the PATH. And these programs read the registry to find the JDK/JRE.

If you placed jdk1.3\bin in the PATH before WINDIR, you should be fine. From your description, I guess you didn't, so you're still getting jdk1.2. Or you can directly execute jdk1.3\bin\java.exe which will work.

Another trick I use to swap JDK's in an out is to place the directory named java\bin into the PATH and just rename the desired JDK to java, like this:

```
c:\>dir j*
```

```
Volume in drive C has no label
Volume Serial Number is 07CF-0B17
Directory of C:\
```

```
JDK12~1 2 <DIR> 03-19-00 1:57a jdk1.2.2
JDK13~1 0 <DIR> 12-21-00 1:42a jdk1.3.0
JDK11~1 8 <DIR> 06-16-00 2:29p jdk1.1.8
0 file(s) 0 bytes
3 dir(s) 16,252.02 MB free
```

```
c:\>PATH
PATH=c:\java\bin;c:\tools;c:\windows;c:\windows\command
c:\>ren jdk1.2.2 java
```

If I wanted to switch to JDK 1.3.0, I simply do:

```
c:\>ren java jdk1.2.2
```

c:\>ren jdk1.3.0 java

and voila! new JVM. The drawback here is you need to know what the current one is, but that's simple using java -version or by process of elimination.

--

Joseph A. Millar



Q: I would like to know if it could be considered as dangerous to change directly the content of a bytecode.

Perhaps you'll think the question is strange... In my case, I'm just trying to replace the content of a known string by another string of the same length.

I 've already tried and it seems to work properly, but I'm not sure that it could be OK with different (all) JVM or for example, if the content of the bytecode could controlled by a checksum or something.  
on JVM there's nothing about these kind of control.

Answer: Depends on your definition of "dangerous." If you mean "error-prone", then I would answer with a definite yes, especially if you are modifying the code itself... you need to be aware of all the jump targets so you can update them as necessary, and understand enough about the verifier that you can write provably safe code; otherwise a verifier will reject the class file.

However, a properly written resulting class file is perfectly valid and portable; that's the meaning of Java's much-hyped "binary compatibility".

There are also no checksums to worry about.

--

Chris Smith



Q: what is the difference between "C:\\\" and "C:\\.\" ?

In the following codes. can anyone explain this ?

```
File dir = new File("C:\\");  
String [ ] files = dir .list();
```

```
File dir = new File("C:\\.");  
String[] files = dir.list();
```

Answer: "." is used to refer to the current directory. For example, using the change directory command "cd ." changes you to the current directory, effectively doing nothing. "c:\\Files\\image.jpg" is exactly the same as saying  
"c:\\Files\\image.jpg"

The code you gave should do exactly the same thing in both forms, to my mind - return a list of the files in the root of the c:\\ partition.

--

Lloyd Colling

<http://members.xoom.com/lcolling/>



Q: This is likely a very silly question. I need to create a .cab file, but I have no idea how to do it...

Answer: Microsoft has a tool for it. See

<http://msdn.microsoft.com/workshop/management/cab/cab.asp>

You can also get a shareware version of a Cabinet Manager (easier to use than the MS tool) from  
<http://www.microlognet.com/>

--

Jos

or you can download a free \*.cab tool at:

<http://home.t-online.de/home/lars.hederer/english.htm>



Q: Why we can reengineer Java byte code (.class file) back to Java source code? But why binary .exe file we are unable to do it? What is the significant difference?

Answer: AFAIK, Java byte code goes back to some source, not to the original source. So, reverse engineering is limited.

> But why binary .exe file we are unable to do it? What is the significant difference?

- (a) There is more than one way to do something using C++.
- (b) There are highly optimizing C++ compilers.
- (c) You won't get the original source anyway. See (a).

Imagine that your C++ code contains inline functions. The compiler is free to place the body of it replacing a call, or instantiate the function and provide a real call to it. First, there is no way to know when it is going to do one or the other. Second, with some code inlined, how to decide what was an inline function and what wasn't?

So, the answer is: the distances between the levels of abstraction between byte code and Java source and between machine code and C++ source are significantly different. The bigger the distance, the less possible it is to recreate the source code.

Victor Bazarov

in java bytecode all the original variable names are kept. in an exe file smaller symbols are used.

Some .exe decompilers are good enough to convince a jury that the "original" source code was reconstituted. See the Microsoft v. Stac case for an example.

Java is easier, but C is still possible.

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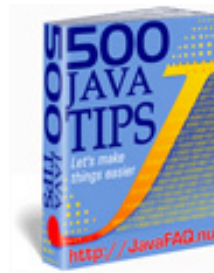
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## Networking

 I have difficulty understanding what is the difference between sockets and ports. They seem to be doing the same thing, receiving/sending data streams to other computers over network.

Answer: A port is a software address on a computer on the network--for instance, the News server is a piece of software that is normally addressed through port 119, the POP server through port 110, the SMTP server through port 25, and so on. A socket is a communication path to a port. When you want your program to communicate over the network, you have give it a way of addressing the port, and this is done by creating a socket and attaching it to the port.

basically, socket = IP + ports


Sockets provide acces to the port+ip

 We were trying to write a mail client using sun's javamail. I was wondering if there is a way to set the priority of the message.

Commercial mail clients does this by setting the X-priority:<num> field of the smtp header ( 1 means highest and 5 means lowest - I think the rfc allows much more than this ). Looking at the documentation I could not find any way. I was wondering if any of you have done anything similar.


Answer: Look at `MimeBodyPart::addHeader(String name, String value);`

You can add any headers allowed by the RFC spec. :-)

 I am trying socket level programming through firewalls. Could somebody tell what Http tunnelling is and how to achieve that using Java 2?

Answer: As an aside, how do you request your proxy server to fetch a page from the net?

<http://developer.java.sun.com/developer/technicalArticles/InnerWorkings/Burrowing/index.html>

 How can I let dial a phone number with a modem in a Java app.? Is there a way without a `System.exec()` call

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and without any M\$ classes?

Answer: You could use javax.comm to do it manually via the serial port and the good old AT command set on the modem. Alternatively, you might look at JTAPl, but that might have its own problems and a lot of overkill.



Does it possible to have two thread running at the same time which reads from the same socket. If a message is received, does both threads then receive it?

Answer: Two threads can read data from the same socket input stream, but they WON'T each get copies of the same data. They'll each get separate parts of the message.



Q: how can I get an IP Address in the class InetAddress? The constructor is private, so I can't use it. I want to call the method getName () to get the domain name out of an IP Address.

Answer: It is not necessary to construct something :-)

Just do it like this:

for example: String hostname = InetAddress.getLocalHost().getHostName();



I'm converting an old java client/server program which is based on raw byte stream heavily into new one which requires utilizing object streams. But if I open input/output object streams on both sides this blocks system and won't proceed...

Hi,

I'm converting an old java client/server program which is based on raw byte stream heavily into new one which requires utilizing object streams. But if I open input/output object streams on both side this blocks system and won't proceed.

```
ObjectInputStream in = new ObjectInputStream(socket.getInputStream());
ObjectOutputStream out = new
ObjectOutputStream(socket.getOutputStream());
```

Answer: Upon opening the ObjectInputStream, the constructor blocks to read a header from the stream (doing who-knows-what). Now, what happens is, both your client and server open the InputStream... and happily wait forever for the other side to send them the header they want. Deadlock guaranteed!

The solution is simple: open the ObjectOutputStream first on at least one side, but better on both sides (usually, symmetry == good). Problem solved

.)

You are trying to keep two streams going at once independently, right.

That means you need at least two threads at each end.



Are there classes available to read and write to an RS 232 port or does this require using native code?

Answer: See the Java Communications API.



Q: Is there a System property that'll tell me the (TCP/IP) machine name? If not, how do you go about it?

I need to display all the machine's TCP/IP addresses to the user. This requires a call to InetAddress.getAllByName(), which requires the machine name. You \*can't\* pass null or "localhost" to this method. Well, you can pass "localhost", but that only gets you the localhost addy itself- 127.0.0.1. Not useful.

Answer: Try this: Working that out, I tried

```
String hostname = InetAddress.getLocalHost().getHostName();
System.out.println(hostname);
InetAddress[] ads = InetAddress.getAllByName(hostname);
```

```
for (int i=0; i<ads.length; i++) {  
    System.out.println(ads[i]);  
}
```

by Michiel



Q: Hi, I am new to JTapi (java telephony). I am trying to run a sample code provided with the JTAPI specification. However I get an error message such as :

Can't get Provider:

javax.telephony.JtapiPeerUnavailableException: JtapiPeer: DefaultJtapiPeer could not be instantiated.

Answer:

As with many Java packages (most notably JDBC) java.telephony is only an API -there is nothing behind it.

You have to pay someone for an implementation.

The point is that if you use the API then it will run with anyone's implementation.



Q: Is there any way to connect through the proxy?

I'm connected to the web behind a proxy. When i try to connect to servers outside they time out and give an exception.

Is there any way to connect through the proxy?

Answer: Try this at the command prompt:

```
java -Dhttp.proxySet=true -Dhttp.proxyHost=<ProxyHostNameHere>  
-Dhttp.proxyPort=<ProxyPortNameHere> <myclass>
```

<ProxyHostNameHere> is to be replaced by the proxy host.

<ProxyPortNameHere> is to be replaced by a proxy port number (i.e. 8080)

<myclass> is the java class that you are running.

You can also set these function through the System class. Check the API for setting properties.

Hope that works.

--

Dan



Q: Socket - My problem is the main class that spawned these threads cannot kill the thread if it's blocked in a read.

I'm making a program that launches some threads that connect to the net and do some stuff. I'm using a blocking read (TCP/IP BufferedReader.readLine) because I've been recommended by a few people that it was the better way to do it.

My problem is the main class that spawned these threads cannot kill the thread if it's blocked in a read.

Is there a thread function I could use? I tried use BufferedReader.ready() to make my read not blocking (BufferedReader.ready() returns true only if the the stream is readable otherwise loop so there is no actual blocking) but my problem with that was that BufferedReader.ready() doesn't throw an exception if the other side disconnects so I'm left looping infinitely. I'm really stuck here so if anyone can give me a strategy (I don't need it spelled out to me just general "I used this function type help) I'd really appreciate it.

Answer 1: I've found the only way to unblock a (Socket) read-blocking thread is to close() the socket from another thread. That'll throw an IOException in the read() call.

--

Michiel

Answer 2: Another method that seems to work is to set a socket timeout to something moderately short (like 10 seconds). The blocked read will throw an exception when the timeout occurs. Then the thread can inspect the

state of a variable (set by another thread calling an appropriate method) to see if it should terminate. This approach also makes it trivial to implement a longer inactivity timeout if desired and gives the network thread an opportunity to do some maintenance work if it wants.

--

Peter



Q: I get the impression that only read operations from a Sockets InputStream throw an Exception if the opposite Socket has closed the socket. Writing to the Socket's outputStream works fine... Is there a way to detect if what I write into a Socket's outputStream is actually still being received by the other side?

Or will I have to check that I actually get a response via the InputStream, and if not, try to open a new Socket and resend the request again?

Answer: You can try calling flush() after writing the output, but there's no guarantee that you'll get an immediate exception. The underlying TCP/IP software may go through timeout and retry logic before giving up. That's probably why you'll usually find out about a broken socket when waiting to read. You should rewrite client so that it sends a request and waits for a response. If it doesn't get a response, it should try to make a new connection and do the request/response thing again. If it doesn't work the second time, it should give up for the time being. Perhaps it really makes sense that one has to verify 'by hand' that requests go through.

--

Duane Morse



Q: ... I imagine, I'll have to cut my file into small datagrams.

I just made a little chat program (client and server) and I would like to add the possibility to transfer files. The client and the server are communicating with TCP/IP using a socket.

I imagine, I'll have to cut my file into small datagrams. Is it necessary ? Has someone an idea or a link to source code of such a function ??

Answer: No. If you were using UDP/IP (DatagramSocket and friends) then it would need to be split up. The point of TCP is to avoid this need. Simple send the entire file in a stream.

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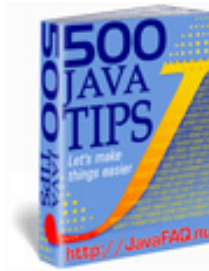
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## Operational Systems & Java


 Is anyone aware of any way to determine OS type, version...

Answer: There is in the java.lang.System try first:

```
Properties p = System.getProperties();  
System.out.println(p);
```


to see what properties you can get(CPU among others)..  
you then can:

```
String prop = System.getProperty("aproerty(the CPU among other)");
```


 Does anyone know if there is an easy way to invoke UNIX shell scripts from a Java application.

Answer: There is!  
execute a shell and then write the name of the shell script on the shells stdin stream.

```
Process child = rtime.exec("/bin/bash");  
BufferedWriter outWriter = new BufferedWriter(new OutputStreamWriter(child.getOutputStream()));  
outWriter.writeLine("filename");  
outWriter.flush();
```

 Is there a way to differentiate the enter key on the main keyboard from the enter key on the keypad?

Answer: I don't think so, they're both represented by the character code 10.

 Is there any way to manage Systray Icons with Java? I didn't even find anything in the Microsoft packages...

Answer: You must create a C/C++ program that call directly the NotifyIcon API to display/manage the Icon in the Systray. Then



call the program from Java with JNI.



Currently I'm running two operating systems on one machine, Windows 2000 and Windows ME...

Currently I'm running two operating systems on one machine, Windows 2000 and Windows ME. Windows ME runs on default, Windows 2000 is on D drive and ME is on C drive. I tried to add the JDK directory to the classpath but there isn't a autoexec.bat on the D directory, but there is one for C. Should I just create a autoexec.bat for D?

Answer: Go to Settings/Control Panel/System/Advanced/Environment Variables... and edit your CLASSPATH variable if exists or add a new one.



I need to be able to run a shell script from java, by doing a host call to unix. I am currently trying 'Runtime.exec' to do this. It says it runs it, but doesn't actually successfully complete the command (which is a file delete).

I need to be able to run a shell script from java, by doing a host call to unix. I am currently trying 'Runtime.exec' to do this. It says it runs it, but doesn't actually successfully complete the command (which is a file delete). A few questions I have about this:

1. Can I trace it or something to see why it isn't working?
2. How can I get the 'return code' from the shell script?
3. Will the java procedure wait for the shell script to execute, or does it run a separate thread concurrently?

Answer: > 1. Can I trace it or something to see why it isn't working?

Runtime.exec() returns a Process object that you can get information from.

If the script is written with sh or some derivate thereof you can do 'set -x' in the script to trace its behaviour. For other scripting languages there is likely a similar mechanism. To see the trace in your Java program, read from the error or output streams of the process (Process.getErrorStream() or Process.getOutputStream()). It's possible that the script is already printing a message to its error stream that you aren't seeing, indicating why it isn't working.

Answer: > 2. How can I get the 'return code' from the shell script?

Call Process.exitValue().

Answer: > 3. Will the java procedure wait for the shell script to execute, or does it run a separate thread concurrently?

The program runs concurrently in a separate \*process\*, not a thread within the JVM. To wait for the process to finish, call Process.waitFor().



Are not-initializable classes and methods like System.out.println() and Math.random() "synchronized" ?

Answer: I think they are synchronized. Simple observation: did you ever see once that printout was broken into two pices by another printouts? I mean for example if you do:

In 1st thread: System.out.println("1234567890");  
And in 2nd thread: System.out.println("something else here");

it never will be broken like:

12345  
something else here  
67890

Even if Sun didn't write about it explicitly, we can see that it is synchronized or at least behaves like

synchronized that is the same for our real life.



How can I pass a string to the command line(DOS) ? Also i want to capture the output given by the command line in a string.

Answer: Try this out:

```
// works for DOS
String cmds[] = new String[2];
cmds[0] = "dir"; // replace with "ls" on UNIX
cmds[1] = "c:"; // replace with "/" on UNIX

// execute the command
Process pro = Runtime.getRuntime().exec(cmds);
// wait until it's done executing
pro.waitFor();

// what did the process output from the Input pipe back to
// this process (okay, who named this stuff)?
InputStream out = pro.getInputStream();

// output it (really slowly)
int i;

while ((i = out.read()) != -1) System.out.println((char) i);
```



How can I take a program that runs in a DOS shell and send the text that comes from the shell program into a Java program where it can analyzed, etc.?

Answer: From a command line, use a pipe (with the "|" symbol):

```
c:\> dosprogram | java JavaProgram
```

In the Java program, read the text from System.in:

```
public static void main(String[] args) throws IOException {
    int nLines = 0;
    BufferedReader in =
        new BufferedReader(
            new InputStreamReader( System.in));
    for (;;) {
        String line = in.readLine();
        if (line == null)
            break;
        nLines++;
        System.out.println(nLines + ":" + line);
    }
}
```



If there is a way to run a java program by just typing the name in UNIX. I mean instead of typing for example "java Main" just type "Main" and run the program. And how to implement that in a makefile?

Answer: Write a script that runs the program and put it in your path. For instance:

```
#!/bin/sh
java BlahBlah
```

Call this whatever you want, mv it to your /usr/local/bin directory, then just type it at the command line and BlahBlah will be run.


 Q: Are there any Java libraries for executing Linux commands?

Answer: Try `java.lang.Runtime.exec()`. E.g.

```
Runtime.getRuntime().exec("xterm");
```

Note if you want to use shell builtins or shell features like redirection you need a shell, e.g.:


```
Runtime.getRuntime().exec(new String[] {"/bin/sh",  
    "-c", "ls / 2>&1 | tee ls.log"});
```

 I'd like to know how to know which operating system java application is running on.

Answer: You could try using the system Properties.  
e.g.

```
Properties prop = System.getProperties();
```

```
String osString = prop.getProperty( "os.name" );
```

 I would like to know how my Java program can catch when someone sends a "kill" to my app in Unix or does a Ctrl-C in windows?

In Unix there is `atexit()` function that handles this type of situation. Is this possible in Java ?


Answer: Starting with 1.3 there is `Runtime.addShutdownHook()`. This is for cleanup only.  
from API: "A shutdown hook is simply an initialized but unstarted thread. When the virtual machine begins its shutdown sequence it will start all registered shutdown hooks in some unspecified order and let them run concurrently. When all the hooks have finished it will then run all uninvoked finalizers if finalization-on-exit has been enabled.

Finally, the virtual machine will halt. Note that daemon threads will continue to run during the shutdown sequence, as will non-daemon threads if shutdown was initiated by invoking the `exit` method. Once the shutdown sequence has begun it can be stopped only by invoking the `halt` method, which forcibly terminates the virtual machine.

Once the shutdown sequence has begun it is impossible to register a new shutdown hook or de-register a previously-registered hook. Attempting either of these operations will cause an `IllegalStateException` to be thrown.

Shutdown hooks should also finish their work quickly. When a program invokes `exit` the expectation is that the virtual machine will promptly shut down and exit. When the virtual machine is terminated due to user logoff or system shutdown the underlying operating system may only allow a fixed amount of time in which to shut down and exit. It is therefore inadvisable to attempt any user interaction or to perform a long-running computation in a shutdown hook."


more read here: <http://java.sun.com/j2se/1.3/docs/api/index.html>

 Q: Is it possible for a minimized window in MS Windows task bar to start blinking? In any IRC client a minimized window starts blinking when a new message appears in it. Is it possible in Java?

Answer: I doubt very much that it is possible with pure java; you would have to use some native code to achieve that. Maybe what you could try though, is to play around with the icon used in the title bar of the frame. I haven't tried this myself - and in any case I'm running linux, but it might be possible to have two icons and to switch them around at some rate using the `Frame.setIconImage(Image)` method. This will only affect the icon itself - not the whole window, but it's better than nothing.

--

Allen Wallis

 Q: How do I find the list of all system properties?

Answer: do smth like this:

```
Enumeration list = System.getProperties().propertyNames();
while(list.hasMoreElements()){
    System.out.println((String) list.nextElement());
}
}
```



Is it cls-like command in DOS (CMD) window? I would like to clean the screen the user sees?

Answer: Unfortunately there is no command as "cls", but try this instead:

```
for (int i=0; i<25; i++) System.out.println();
```

It will print 25 empty lines and they will move current printouts up



Q: Why my program does not give the address of the local machine on one PC and give on another?

Answer: As long as you have TCP/IP installed, you should at least get 127.0.0.1



Can applet corrupt my registry file?

Q: I have written a java applet for displaying my genealogy. It has worked fine at home. My brother tested it on my web site with no problems. BUT, the third person I asked to take a look at it reported, that though it worked fine, when he exited the page, his system locked up and he had to reboot. After the reboot he said his registry was corrupted and had to be restored.

Has anyone seen anything like this? if so, do you have any suggestions as to probable cause and fix?

Answer: Any time you don't shutdown properly, your registry can be corrupted, even if the program that did the freezing was not even using the registry.

The registry is one of the stupidest ideas ever conceived in computer science. It puts ALL your eggs in one basket.

by Roedy Green

For the JAVA GLOSSARY see <http://mindprod.com/jgloss.html>



Q: Does anybody know how to find out the complete path of a system default browser (if there's such) from a Java stand alone app?

Answer: Under Windows you can 'invoke' the default browser calling 'start filename.html', under Unix is a lot more complicated because nobody can assure you that a browser exists and the user is under X....

--

Davide



Q: ...The problem is that, after the file is uploaded to the server, every end of line is placed with ^M character...

I have written a servlet which uploads a file from client(Win32) to server (Unix). I have used DataInputStream to read the file in bytes and FileOutputStream to write the file to the location in the server.

The problem is that, after the file is uploaded to the server, every end of line is placed with ^M character. This problem is faced only when I upload to Unix Server from Windows O/S.

Answer: This is normal, I think. A line ends with a single return symbol in Unix and ends with a return symbol and a switching line symbol in Windows. The editor in Unix shows "^M" when it meets the switching line symbol. So to fix this bug, you can remove the switching line symbol in the end of lines when you upload files from Windows to Unix.

Or Use a `BufferedReader` to read the source file (line by line) and a `BufferedWriter` to write the destination file. That way the source line separators will be discarded and the correct separators (according to the target OS) will be used.

If you only have an `InputStream` to start with, use `InputStreamReader` to convert it to a reader.

--

Jorge



Q: I have a server written in Java that I would like to start up as a NT service...does anyone know how to do this?

Answer: Check this site:

<http://www.kcmultimedia.com/smaster/>

I read there:

"ServiceInstaller is a FREE utility that makes it easy to install programs as Windows NT Services, including pure Java applications, without manually editing the registry!"



Q: Does any one know how to kill or stop a process through java?

Answer: It must be a process you created, and there are rare occasions when this will not work.

```
Process p = Runtime.getRuntime().exec(path);
```

```
// later ...
```

```
p.destroy();
```

--

Paul Lutus



Q: I'd like to determine the free disk space in a platform independent way. So far, I've found no Java way to do so...

The best I've been able to come up with is running the UNIX "df" utility (which is available for a number of non-UNIX platforms, too, such as Win32 and OS/2).

Answer: Samizdat Productions Releases JConfig 2.1.1 JConfig is a class library that extends the core Java API. It lets you work with files, web browsers, processes, file types, and other system-level items in a much more advanced manner than that provided by the standard Java class libraries. A list of JConfig's features is given below.

JConfig is free for most freeware and educational projects, and it now comes with the complete Java and C++ source code!

\*\* Download JConfig here:

<http://www.tolstoy.com/samizdat/jconfig.html>

Here's a partial list of JConfig's features, by category:

Files:

Enumerate the user's disk drives, and obtain extended information on files, directories, volumes, and filesystems: their icons, creation dates, version information, mount points, and more...

Web Browsers:

Launch a file or URL in the user's Web browser...

Video Monitors:

Enumerate and get information on the user's video monitors: bit depth, bounds, and more...

External Processes:

Create external processes, send basic commands to external processes, obtain the PSN or HWND of a process you created, and enumerate the currently running processes...

File Types:

Find applications associated with a given file type, find applications by name, and convert between Windows file extensions and Mac creator/file type codes...

--



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## Servlets & Servers



Q: The first thing is that i don't know how to do to create Servlets ... no more precisely, I don't know how to compile it !!

It says that it doesn't find the packages (javax I think) ...

Plz, could someone tell me exactly what I should put on my environment variables (Class\_path, path, java\_home etc...)

Answer: Well, I also started to learn about servlets. I recently downloaded JDK1.3.0 and Apache Tomcat 3.1.0 .

I set the following paths.

```
CLASSPATH = %TOMCAT_HOME%\webapps\examples\WEB-INF\classes\work;
```

(my working directory)

```
TOMCAT_HOME = C:\JDK\tomcat;
```

(or wherever you installed tomcat)

```
PATH=%TOMCAT_HOME%\bin ;
```

appended tomcat bin path to the path statement)

I also copied the servlet.jar found in the tomcat bin directory to both:

```
C:\jdk\jre\lib\ext\
```

```
C:\Program Files\JavaSoft\JRE\1.3\lib\ext\
```

I hope this helps....

Gregory Pedder



Q: Any simple server I can download to run my java servlets...

Answer:

Try Resin, [www.caucho.com](http://www.caucho.com)

Try tomcat from <http://jakarta.apache.org> - pure Java,

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

servlets 2.2, good stuff! Tomcat is good. It's not fast, but it's very easy to setup and good solution for development. Since most heavy-duty servers do implement SUN specification, one can migrate application in no time.

--

DG

Jigsaw is also good but doesn't support the Servlet 2.2 spec

<URL:<http://jigsaw.w3.org/>>

Both of these are open source with BSD-like license.

There's also Jetty <http://jetty.mortbay.com/> Artistic license, Servlet 2.2 spec compliant), GNU Paperclips <http://www.tapsellferrier.co.uk/gnupaperclips/> GPL, claims to be moving towards Servlet 2.3 spec compliance) and also vqServer <http://www.vqsoft.com/vq/server/> which is free but not open source.

Finally many of the commercial servers can be downloaded free for trial periods.

--

Simon Brooke <http://www.jasmine.org.uk/~simon>



How can I get access to Cookie set at the Client?

Answer: The following code should access a cookie on a client. It reads in all the cookies on the machine. And checks there name for whichever one you are looking for.

```
Cookie[] cookies = request.getCookies();
for(int i=0; i < cookies.length; i++) {
    Cookie thisCookie = cookies[i];
    if (thisCookie.getName().equals("Cookienam")) {
        // Do whatever you want with the cookie....
    } else {
        // cookie doesn't exist...
    }
}
```

The Cookie class is in package javax.servlet.http.Cookie



I'd like to provide to the showDocument() method of an applet the URL of a CGI program...

I'd like to provide to the showDocument() method of an applet the URL of a CGI program with including a certain number of (URL-encoded) parameters to this URL (which is the same as doing a GET HTTP request). What is the maximum size I can give to this URL ?

Answer: If I remember exactly it something around 240 for many servers. Maybe less, but not more!!!  
1000000%

I read it last year in "Java Servlet Programming" from O'Reilly.



I am experimenting a Java server application. This program has worked well

It did start on the Red Hat Linux 6.0 server, but it does not open the socket, in other words, it cannot communicate with the client applet on the Linux. On this Linux server I have installed every components and all of them were running at the experiment time. Why does this server application communicate with the client applet only on the Linux? Does anyone give me a suggestion?

Answer: Take a look at your port number. If it is under 1024, it is a protected port number and non-privileged users cannot touch it on Linux or any other Unix-system.




Where Can I find a server to try my servlets?

Free E books: [www.iqbalkalmati.blogspot.com](http://www.iqbalkalmati.blogspot.com)

I am creating a client/server application. I don't run my own server and my ISP won't allow me to install and run applications from their server.

Does anyone know of anywhere (preferably FREE) that will allow me to use server side Java? Any help is GREATLY appreciated.


Answer: <http://www.mycgiserver.com/>

 Hi, I am using servlets. I need to store an object NOT a string in a cookie. Is that possible? The helpfile says BASE64 encoding is suggested for use with binary values. How can I do that???

Answer: You could serialize the object into a `ByteArrayOutputStream` and then Base64 encode the resulting byte []. Keep in mind the size limitations of a cookie and the overhead of transporting it back and forth between the browser and the server.

Limitations are:

- \* at most 300 cookies
  - \* at most 4096 bytes per cookie (as measured by the characters that comprise the cookie non-terminal in the syntax description of the Set-Cookie2 header, and as received in the Set-Cookie2 header)
  - \* at most 20 cookies per unique host or domain name
- For more details please refer to RFC 2965.

 Q: Hi, I want to send a POST request, but I can't find such functionality in the servlet API, how can I do this? Must I implement this with a socket connection to port 80?

Answer: A servlet can do anything a standalone Java application can do. It doesn't need anything beyond what the `java.net` package already provides. You can use an `URLConnection` to POST to a server program like a servlet or CGI script:

```
// Create a string with the parms you want to post and convert it to a byte array. You may need to
// pass the values through java.net.URLEncoder.encodeURL()
// if they have embedded blanks or special characters
```

```
String parms = "a=10" + "&b=20" + "&c=30";
byte[] bytes = parms.getBytes();
```

```
// Create a URL pointing to the servlet or CGI script and open an HttpURLConnection on that URL
```

```
URL url = new URL(TARGET_URL);
HttpURLConnection con = (HttpURLConnection) url.openConnection();
```

```
// Indicate that you will be doing input and output, that the method is POST, and that the content
// length is the length of the byte array
```

```
con.setDoOutput(true);
con.setDoInput(true);
con.setRequestMethod("POST");
con.setRequestProperty("Content-length", String.valueOf(bytes.length));
```

```
// Write the parameters to the URL output stream
```

```
OutputStream out = con.getOutputStream();
out.write(bytes);
out.flush();
// Read the response
BufferedReader in = new BufferedReader(
    new InputStreamReader(con.getInputStream()));
while (true) {
    String line = in.readLine();
    if (line == null) break;
```

```
        System.out.println(line);
    }
    in.close();
    out.close();
    con.disconnect();

--
Phil Hanna
Author of Instant Java Servlets
http://www.philhanna.com
```



I am writing an application, using Java Servlets, which requires me to set and read cookies. It works okay, but fails if I set the domain of the cookie to something other than the current server.

I am writing an application, using Java Servlets, which requires me to set and read cookies.

Using the servlet API, and the `javax.servlet.http.Cookie` class.

I created a new cookie, and added it to the http response, using its `addCookie()` method. It works okay, but fails if I use the `setDomain` method, on the newly created cookie, to set the domain of the cookie to something other than the current server.

Answer: I suspect that is not a legal operation for any browser to accept a cookie that has a domain inconsistent with the source of the cookie.

by William Brogden



I am working on weblogic server 5.1 with MsSQLSERVER7 i am able to load the driver but it says unable to get socket connection

I am working on weblogic server 5.1 with MsSQLSERVER7 i am able to load the driver but it says unable to get socket connection. It says connect to the MSSQLSERVER's host and port no. How do I get these name and value.

Answer: The MS Sql Server's host is usually the name or ip of the server that run SQL Server, if you know the IP (ping <nameoftheserver>), put the IP in it, it will be faster, for the Port number, sincerely I don't remember the standard port, but look into the SQL Server documentation and you will find it.

by Davide



Whenever I compile my servlets it always says "can't find package javax.\*" even though I downloaded the JSDK. Where the JSDK files so it'll find that package?

Answer: There are no classes in the `javax.*` package. There are classes in `javax.servlet.*` and `javax.servlet.http.*`, but neither are really related to `javax.*` -- importing `javax.*` won't affect them. You should import the packages that you really want to use!



Q: I have a list of html links on a web page, and I want to be able to call a servlet based on what the user clicked on...

I used:

```
<a href=/servlet/SomeServlet">
```

for each link, and I want the servlet to display information based on what the user clicked on. If the user click on an applet link, I want the Servlet to print, "You just clicked on an applet", etc.

My question is, how do I send information to a servlet, based on what html link the user clicked on? I know i can use `getParamaterValue()` for getting information off of forms, but I'm not sure how to do this with html tags.



Answer: Change the link to:

```
<A href="/servlet/SomeServlet?click=apple">link</A>
```

In the servlet, use `request.getParameter("click")` to retrieve the value.

Give each link a unique "click" value and that will tell you what was clicked.

B Russell



Q: I'm looking for a Java HTTP server framework that can be used and modified for a project I'm going to be working on.

My boss asked me what the equivalent in Java was that IIS was in the Windows world or Apache was in the UNIX. I've looked at Jigsaw, but am wondering if anyone out there knows of other resources...open source would be great. Thanks in advance for any input.

Answer: There are other pure Java web servers, like the Apache PicoServer, Jetty (<http://www.jetty.org> ???). Perhaps you could take one of those to write a http block for the Apache Server Framework avalon (<http://java.apache.org/framework> )

Another tip is to search sourceforge for web servers.

<http://www.sourceforge.net>

--

Glen Shelly



Q: I am currently running Microsoft's IIS server. I have the Java Virtual machine installed on this system. What else will I need to run my servlet. Do need the Apache web server instead? Will IIS support Java servlet?

Answer: You will need a Servlet Engine to run your servlets.

You can use either Allaire's JRun (<http://www.jrun.com>) or Tomcat (<http://jakarta.apache.org>).

Both of them work with IIS.

--

Madhusudhanan Challur



Q: How can I avoid browser caching?

In an applet, I call the function `showDocument` to send a GET message to one of my servlets, which sends me back a PDF file dynamically generated by this servlet.

My problem is : the browser (in this case IE) always sends me back a PDF file with the same content.

Answer 1: There are a few possibilities to avoid this problem.

A simple workaround is to add a random number URL variable with the request, such as "ranx" with a value of the milliseconds since midnight. This will make the request unique and, hence, avoid browser caching.  
by Duane Morse

Answer 2: There are two other response `setHeader` attributes you can set:

```
response.setHeader("pragma", "no-cache");  
response.setHeader("Cache-Control", "no-cache");  
response.setDateHeader("Expires", 0 )
```

Just in case.

Doug Schwartz

Answer 3: // for Answer 1 and 2 please go to yesterday's tip.

When you generate the PDF file, make sure you set the header to tell the browser that the file will expire at a certain time. The browser should not cache the response past the given time. The Java code looks something like

this:

```
import java.text.SimpleDateFormat;  
import java.util.Date;
```

```
S SimpleDateFormat dateFormat  
= new SimpleDateFormat("EEE, dd MMM yyyy - HH:mm:ss z");
```

```
response.setHeader("Expires", dateFormat.format(new Date()));
```

The format of the date is very particular.

---

Scott Gartner



Q: Wich free software can I use to debug Servlets?

Answer: What you need to do is use Jakarta-Tomcat to run your servlets. Then, bring in all the tomcat jars into your "required libraries".

Then set up your "project run" to actually run the Tomcat class. If you run it in debug mode, you should be able to put breakpoints in your servlets.

We did this at a project I was on with weblogic and EJBs, and Jbuilder 4 does it with tomcat, so I'm assuming you can do this as well.\

--

Trever M. Shick

<http://xjr.sourceforge.net>

<http://velocidoc.sourceforge.net>

<http://www.objectwave.com>

<http://www.geocities.com/trevershick>



Q: Is tomcat an EJB container?

Answer: No. It's only a servlet/JSP container. However, you can certainly use it with an EJB container, and you can get another free EJB container such as JBoss.

--

Chris Smith

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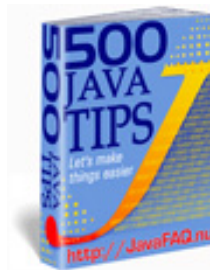
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## Sound & Multimedia



Do you know that Version 1.3 of the Java™ 2 Platform includes a powerful new API for capturing, processing, and playing back audio and MIDI (Musical Instrument Digital Interface) data. You can read here more: <http://java.sun.com/j2se/1.3/docs/guide/sound/index.html>



I'm doing a small console java app, and want to know what the function is to make the pc speaker beep....

Answer: `Toolkit.getDefaultToolkit().beep();`



Q: I would like to burn a CD from within my code, that way I won't have to waste so much time making illegal copies of music. Is there a convenient way to do this in Java?

Answer: Unfortunately Java doesn't provide any API for this :-)



Q: I use `System.out.println("\007")` to make a beep. It works fine with `java.exe` version 2.2.2\_007, but doesn't work when I use `javaw`.

It's said that `java` and `javaw` are exactly the same but apparently they have some differences. How I can use `System.out.println("\007")` to make a beep with `javaw`?

Answer: `System.out.println` sends a character to the standard output stream, which is redirected to nowhere when you use `javaw`. Same would happen if you ran your application under UNIX and redirected standard out to `/dev/null`. I'd guess that your code wouldn't work at all on a Macintosh.

To solve this problem, do what you need more directly, for example using `java.awt.Toolkit.beep` instead of a non-portable kludge with sending special ASCII codes to an output stream.

Chris Smith



Q: Just wondering if Java has classes and methods supporting joysticks? Is there any sample code working with joysticks some where?

Answer: Sure it does. It's part of the Java 3D API. There is an InputDevice interface. It is described as follows:

"InputDevice is the interface through which Java 3D and Java 3D application programs communicate with a device driver. All input devices that Java 3D uses must implement the InputDevice interface and be registered with Java 3D via a call to PhysicalEnvironment.addInputDevice(InputDevice). An input device transfers information to the Java 3D implementation and Java 3D applications by writing transform information to sensors that the device driver has created and manages. The driver can update its sensor information each time the pollAndProcessInput method is called."

The trick is finding a driver. :)

<http://sourceforge.net/projects/j3djoystick/>

<http://www.j3d.org/utilities/sensors.html>

Jim S.

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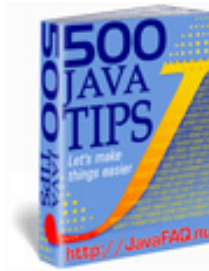
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 String, text, numbers, I/O I part

 An idea for validating the phone number field on a form..,

Does anyone have an idea for validating the phone number field on a form. I am looking for something that will basically check this input mask

\*111\*111\*1111\*

Where the 1's are number's and the \*'s are either - . spaces, or any other character like (). Please advise.

Answer1: You could use a regular expression package. For example, Jakarta ORO:

<http://jakarta.apache.org/oro/>

Answer2: i'm thinking regular expressions. See:

<http://www.cacas.org/java/gnu/regexp/>

<http://www.crocodile.org/~sts/Rex/>



Could someone show me a basic File I/O example? I just can't figure out streams. I'm willing to accept basic mockery in exchange...

Could someone show me a basic File I/O example? I just can't figure out streams. I'm willing to accept basic mockery in exchange...

Answer:

```
import java.io.*;
```

```
public class FileIO {
```

```
    public static void main(String[] args) throws Exception {
        if(args.length!=1){
            System.out.println("Invalid parameters!!!");
```


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```

        System.exit(0);
    }
    File fl = new File(args[0]);
    FileReader fileReader = new FileReader(fl);
    BufferedReader bufferedReader = new BufferedReader(fileReader);
    String currentLine;
    while( (currentLine = bufferedReader.readLine()) != null ){
        System.out.println(currentLine);
    }
}
}

```

 Q: Does anybody know a convenient way to pause the dos program execution until user hits enter? In C I used getch. Does Java have an equivalent of "cin>>"?

Answer:

```


try {
    System.in.read()
} catch (Exception e) {
}

```

Have fun!


--

Bary

 I've got a (simple) menu on a new application and am trying to put in the works behind the cut, copy & paste menu options - does anyone know how I can do this - what's the code or can you point me in the right direction?

Answer: Look at java.awt.datatransfer package. It contains much of the tools necessary to implement cut, copy, paste.

Can anyone please explain clearly how BufferedReader works and how to use it to get input from a keyboard?

 Q: Can anyone please explain clearly how BufferedReader works and how to use it to get input from a keyboard?

Answer: BufferedReader is a filter reader class.


That is, it wraps another reader and reading from it is like reading from the reader it wraps, except that it changes something. In the case of BufferedReader, it reads in large chunks and then you can retrieve its data in smaller bits. To use it to read from System.in, you first need a reader to wrap. You can bridge from an input stream (which System.in is) to a reader by using an InputStreamReader.

Then wrap that in a BufferedReader as follows:

```
BufferedReader input = new BufferedReader(new InputStreamReader(System.in));
```

Now you can call methods of BufferedReader to read from standard input. Generally, you create a BufferedReader to be able to call the readLine() method. That isn't BufferedReader's main intended use -- the main intended use is performance -- but you don't generally care too awfully much about performance of reads from the console. So call readLine to get a line of input, which will be null on end of stream (user presses Ctrl-D on UNIX or a file was redirected in and is done).

answered by Chris Smith

 How do I encode the value of a variable of type long (or int) into bytes? And how do I restore the original value of the long (or int) variable back

How do I encode the value of a variable of type long (or int) into bytes such that the number of bytes used will always be the same, say 4 bytes?

Answer:

```
int in; ...
byte b1 = (byte)(in & 0xff);
byte b2 = (byte)((in >> 8) & 0xff);
byte b3 = (byte)((in >> 16) & 0xff);
byte b4 = (byte)(in >>> 24);
```

: How do I restore the original value of the long (or int) variable back  
: from the bytes that i have just created then?

Answer:

```
int in = (b1 & 0xff) | ((b2 << 8) & 0xff00) |
((b3 << 24) >>> 8) | (b4 << 24);
by Tim Tyler
```



Is there any Java API allowing creating easily PDF files (Adobe Acrobat type) including images?

Answer: No, just text

Etymon™ PJ is a developer toolkit for parsing, modifying, and creating PDF documents.  
<http://www.etymon.com/pj/index.html>



Are there any public domain matrix/linear algebra java packages out there?

I'm mainly interested in solving systems of equations and finding matrix inverses.

Answer: <http://math.nist.gov/javanumerics/>

The JavaNumerics page provides a focal point for information on numerical computing in Java.



Does anyone know how to write multi-line string in Java?

Answer: Something like this:

```
String a =
    "This is a
      multiline string.";
```

It is really pain to print HTML or XML from the Java program. Perl offer something like this:

```
print <<END_HTML;
<html>
  <body>
    <h1>this is html.</h1>
  </body>
</html>
END_HTML;
```

Answer: Try this:

```
String a = "This is a\nmultiline string"
```

A "\n" stands for a line feed. Take a look at the Java language specification (downloadable on Sun's site), it has a section about strings.

Answer2: You mean like this?

```
String a = "<html>" +
    "<body>" +
    "<h1>this is html.</h1>" +
    "</body>" +
    "</html>";
```



I am doing some servlet programming and I need to include a few " in a string. How can I do this?

Answer: By using the escape character \ like so:

```
String s = "\"";
```



I cannot find the method to convert a binary number to an int. I used Integer.toString to get a decimal to binary but I don't know how to convert it back.

Answer: Try using Integer.parseInt(String s, int radix) with radix = 2 that should do your job.



How do I launch a native Document by its Associated MIME Type? For example, I would like to ask the 'operating system' what application is associated with .DOC and then launch it.

Answer: On WinNt,

```
String docName = "c:\\someyourdir\\nameofdoc.doc";
Runtime.getRuntime().exec("cmd.exe /c "+docName);
```



Q: How do I indicate Unicode characters that cannot be represented in ASCII, such as ö?

Answer: from "Java Tutorial (<http://java.sun.com/docs/books/tutorial/i18n/text/convertintro.html>)

"To indicate Unicode characters that cannot be represented in ASCII, such as o, we used the \uXXXX escape sequence. Each X in the escape sequence is a hexadecimal digit. The following example shows how to indicate the o character with an escape sequence:

```
String str = "\u00F6";
char c = '\u00F6';
Character letter = new Character('\u00F6');
```



When I tried to read one string representing boolean value and convert it into boolean it didn't work. Finally I found that Java API has a bug!

I wrote the program that uses reading ini file settings for initialization. All settings in a file are strings. I am converting them to appropriate type during reading. When I tried to read one string representing boolean value and convert it into boolean it didn't work. Finally I found that Java API has a bug:

```
boolean x = true;
getBoolean(x);
will show false!!!!
```

Why Java has method that doesn't work? Is it bug in Java or I am stupid?

Answer: neither statement is true! It is not a bug and you are Ok! Just please read more carefully JavaDoc next time.

It is written there for getBoolean ():

"Returns true if and only if the system property named by the argument exists and is equal to the string "true". (Beginning with Java 1.0.2, the test of this string is case insensitive.)

A system property is accessible through getProperty, a method defined by the System class."

So you didn't use this method properly...

Use instead:

```
public static Boolean valueOf(String s)
```

This method returns the boolean value represented by the specified String. A new Boolean object is constructed. This Boolean contains the value true if the string argument is not null and is equal, ignoring case, to the string "true".

example:

```
boolean x= true;
```

```
(Boolean.valueOf(x)).booleanValue()
```

gives you proper boolean (not Boolean!) value



Q: I'm working on a java project and looking for a better API that can generate PDF, work with Excel, Word documents... Where can I find it?

Answer: We have a list here:

<http://www.javafaq.nu/java/office/index.shtml>



Q: I'm looking for a rich text editor that I can embed within a web page, and allow users to enter rich text that I can in turn store as HTML.

I've seen similar applets through web based e-mail clients. I'd appreciate it if someone could point me in the right direction!

Answer:

Try Swing, by Robinson, Manning Publication. You could probably adjust the code to fit into the applet style. It is here

<http://javafaq.nu/java/free-swing-book/free-swing-book-chapter20.shtml>

John



Q: I want to have a while loop execute for a maximum of n seconds or until it receives something in an input stream. How would I do this?

Answer: I think you could do it this way:

\*\*\*\*\*

```
InputStream Input=null;
```

```
int n=10; /*Number of seconds to wait*/
```

```
/*initialize you input stream*/
```

```
...
```

```
/*Now start you while loop*/
```

```
long IStart = (new Date()).getTime();
```

```
long ICurrent = (new Date()).getTime();
```

```
while((ICurrent-IStart < n*1000) && (Input.available()==0)){
```

```
    Thread.currentThread.sleep(100); /* This will give JVM time to other threads */
```

```
    ICurrent = (new Date()).getTime();
```

```
}
```

\*\*\*\*\*

You could simply count number of steps inside the loop keeping in mind that each step takes 100ms but I think using dates would be a bit more precise method.

Alex Shlega



Q: I tried to write a program where I imported the java.math.\* package...But sin() didn't work!

It looked something like this.

```
import java.math.*;
```

```
public class ...{
```

```
    public Fnx (double x){
```

```
        double answer = sin(x) - 2;
```

```
        return answer;
```

```
}  
...  
}
```

But `sin()` didn't work! I had to write `Math.sin()`, at which point I could just comment the import statement out.

What am I doing wrong?

Answer: You're confusing what the import statement does, and what `Math` is.

`Math` is a class in the package `java.lang`, just as `System` is.

`java.math` is a package containing two classes: `BigDecimal` and `BigInteger`.

When you call `Math.sin`, you're using a class method in the `Math` \*class\*, just as when you call `System.out.println()` you're using an instance variable called "out" which belongs to the `System` class.

Your import statement merely means you can use `BigDecimal` and `BigInteger` without prefixing them with `java.math`. - ie "`new java.math.BigInteger()`" becomes just "`new BigInteger`".

You can't get away from putting `Math.sin` in your class.

--

Jon Skeet - <http://www.pobox.com/~skeet>

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## String, text, numbers, I/O II part



Q: How do I parse it to date and make a date difference?? How many days in between the String from and to?

I am always confusing with date and time.

I have 2 String, from and to

String from = "01.01.2001" //dd.MM.yyyy

String to = "01.03.2001" //dd.MM.yyyy

How do I parse it to date and make a date difference?? How many days in between the String from and to?

Answer:

```
import java.text.SimpleDateFormat;
```

```
import java.util.Date;
```

```
public class Tmp {
```

```
    public static void main( String argv[] ) throws Exception {
```

```
        long DAY = 24L * 60L * 60L * 1000L;
```

```
        SimpleDateFormat df = new SimpleDateFormat( "MM.dd.yyyy" );
```

```
        Date d1 = df.parse( "01.01.2001" );
```

```
        Date d2 = df.parse( "01.03.2001" );
```

```
        System.out.println( "The number days between:" );
```

```
        System.out.println( d1 );
```

```
        System.out.println( "and:" );
```

```
        System.out.println( d2 );
```

```
        System.out.println( "is: " + (( d2.getTime() - d1.getTime() ) / DAY ));
```

```
    }
```

```
}
```

But the calculation of the difference in times may not be suitable due to timezone issues and such. I believe there must be a better way?


Michael B. Allen

 Q: How do I convert a String to an integer. For example: String strSEQ = "SEQ7";

How do I pull "7" from the string and convert it to an integer?

Answer: I'd do something like this:

```
StringBuffer digits = new StringBuffer();
char c;
for (int i=0; i<strSEQ.length(); i++) {
    c = strSEQ.charAt(i);
    if (Character.isDigit(c))
        digits.append(c);
}
int intValue = Integer.parseInt(digits.toString());
--
Michiel
```


 Q: How can I display other languages such as chinese, french, japanses etc. inside applet or frame?

Answer: You have to install the appropriate font, and add it to a font.properties file. Further information can be found here:

<http://java.sun.com/products/jdk/1.1/docs/guide/intl/index.html>  
[http://forum.java.sun.com/read/16805306/q\\_CUP8NP-1rgAAYsA#LR](http://forum.java.sun.com/read/16805306/q_CUP8NP-1rgAAYsA#LR)  
<http://developer.java.sun.com/developer/qow/archive/65/index.html>

There is another constructor, with a third parameter. Using that one, you can get the boundary markers, such as the comma, returned to you as well. That would allow you to handle your empty strings.

--  
Michele.


 Q: How to know in Java if a given font has or not a fixed width ?

For example to list all the "fixed width" fonts that are available on the user's platform.

Answer: I'm not sure whether there's an easier solution... if there is none, you might try to get the FontMetrics objects from a specific Font. Then iterate over every character and call charWidth(char ch) on each. It should return the same value for each character if it's monospaced, different values for each one otherwise.

This might be a little "hacky", but if you really need an idea...


Karsten

 Q: I want to create a Date object by just specifying the Year, Month and Day.

e.g. the user can enter 1998 as Year, 11 as Month of Nov, 15 as the day.  
With these three information, how can i create a Date object (or similar object that stores the data)?

Answer: The correct way to do this is something like this:

```
Calendar cal = Calendar.getInstance();
cal.set(1998, Calendar.NOVEMBER, 15);
Date date = cal.getTime();
```

 Q: Let's say I have a text string with the text: Hello! Then how do I add quotes to it so it will be: "Hello!"

Answer:  
answer is String s = "Hello!"

```
"\" + s + "\"
```

and if the result is to become the new value of s,

```
s = "\" + s + "\"
```



Q: I want to send Image through network. I made OutputStream to send Image...

```
OutputStream out = socket.getOutputStream();  
but I can't send Image directly.  
How can I send Image?
```

Answer: Unfortunately, the java.awt.Image class is abstract and is not serializable, otherwise this would be easy.

From the Java docs: "The abstract class Image is the superclass of all classes that represent graphical images. The image must be obtained in a platform-specific manner."

Consider using the Image.getSource method, getting the producer, getting the bytes, then send [width][height][bytes...].

--

Mark Watson, Java consulting, Open Source and Content: [www.markwatson.com](http://www.markwatson.com)  
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Q: I want to get the code behind an HTML page.

```
Answer:  
URL url = new URL("http://www.sun.com");  
BufferedReader reader;  
reader = new BufferedReader(new InputStreamReader(url.openStream()));  
String str;  
while ((str = reader.readLine())!=null){  
    // process str  
}
```



Q: I am wondering if JDK supports to open a file in the exclusive mode?

Answer: No, file locking is not supported in current VMs. You can implement lockfiles, however, using the File.createNewFile() method. Since JDK 1.3:

"Atomically creates a new, empty file named by this abstract pathname if and only if a file with this name does not yet exist. The check for the ' existence of the file and the creation of the file if it does not exist are a single operation that is atomic with respect to all other filesystem activities that might affect the file. This method, in combination with the deleteOnExit() method, can therefore serve as the basis for a simple but reliable cooperative file-locking protocol."



Q: How do I write an image to stdout? This is for a cgi program that will return an image to a browser.

For example, if a user click on a link to <http://somewhere.edu/cgi/getpix.cgi> the browser will receive image data from the cgi program and will display the image.

Answer: Send "Content-type: image/gif" - and then send the data.

Alternatively, send an HTML page, with a pointer to the (possibly-freshly-written) image on the server.

--

Tim Tyler Try my latest game - it rockz - <http://rockz.co.uk/>



Q: Does anyone know how I can get around the fact that a Message obj (from the JavaMail API) is not

serializable?

I would like to save a message obj to the hd, then read the file (is 'file' the wrong word here?) back to my e-mail client and read it as a Message obj.

Answer: The obvious answer is: implement serializable yourself in a subclass!

But! That won't work. The serialization mechanism will throw an exception at runtime. Even if it didn't, the class may be nonserializable for a good reason, for example it might contain a socket, which can't be reinitialized from a stream.

What you need is a subclass that implements the Externalizable interface, and then your own code that saves as serializable objects those attributes of the object that you need to reconstitute it later. I'm not familiar with this particular object, but I imagine it has several get() methods that return serializable objects like Strings or ints. What you have to do is recover those objects and put them into the output stream yourself, and reverse the process on unserialization. The fields that are not serializable you ignore.

You have to provide a no-argument constructor that reconstructs anything you aren't going to serialize (for example, opening a new socket). Read about the Externalizable interface for more details.

--

Frank LaRosa



Q: Is it possible to send Vector class in socket communication. If it is, what function can make it.

Answer: Make sure the objects contained in the Vector are Serializable. Look at java.io.ObjectOutputStream for serializing the Vector by wrapping the output stream from socket with the ObjectOutputStream...



Q: How can you tell if an integer is odd or even?

I know an even number is divisible by 2 but I'm thinking then how can I detect if a resulting number after dividing 2 ints has a remainder?

Answer: Basically the method is simple, if a variable contains an odd number I want to return the value 'zero', and on the other hand if the variable contains an even number I want to return the value 'one'.

Check out the % (modulus) operator, it computes the remainder.

```
public int modMethod(int div){
    if(div%2==0){
        return 1;
    } else{
        return 0;
    }
}
```



Q: How can I round a number to specified precision?

I have a double field that I would like to round to 2 places of precision, however, it seems like the documentation on the round function only rounds to closest integers. So that I would not be able say .3658585859 = .37 as I would like.

Answer: can you scale the number up and then down again when you are finished?

e.g.  $0.3658585859 * 100 = 36.58585859$   
 $\text{round}(36.58585859) = 37$   
 $37 / 100 = 0.37$



I understand that bitwise operations change the 0/1 bits of a number. Question is why?

I suppose it's interesting that you can manipulate numbers this way, but I can't think of a practical use for doing

that.

Can anyone help me understand when are bitwise operations used and why you would use them?

Answer: Bitwise manipulation is often used where memory consumption is critical, and a piece of information may be encoded in less than one byte, for instance. In communication software and protocols, information may be interpreted as a stream of bits where the information is encoded at the bit-level, and you use bitwise manipulation to extract the pieces of information encoded in the bytes. There are other situations where bitwise manipulation is used, as well.

by Greger Ohlson



Why cannot I cast from double to java.lang.Object?

Q: I'm trying to build a vector, however, one of the objects that I'm passing to the vector is of type double. How do I cast the double as an object so that I may insert the value into a vector? Does this make sense? Here is the following snippet of code I was trying to use:

```
myVector.add (1, (Object)myDouble);
```

Of course when I try to compile I get the following message:

Invalid cast from double to java.lang.Object

Could someone please explain why? I realize that Object is the mother of all objects and therefore ANY reference data type "is an" Object. So therefore I shouldn't have to cast the double, right? Help, I'm a beginner!

Answer: A double is not a reference type, but a primitive one. Hence, it doesn't inherit from Object (or anything else, for that matter). To put primitives (byte, short, int, long, float, double, boolean, char) into something that requires an Object, use Java's wrapper classes.

The wrapper classes are Double, Integer, Long, Boolean, etc., and are basically an object "wrapped" around a primitive type. You make a Double object by:

```
Double d = new Double (myDouble);
```

and to get the actual value back,

```
double z = d.doubleValue();
```

It works the same way for all the rest of the primitive/wrapper pairs.

by Trevor Hill



Q: is there a mod (x, y) function that returns the remainder when x is divided by y? Something equivalent to fmod(x,y) in C?

Answer: `a = x%y;`



I'm having trouble figuring out how to convert characters to their ASCII value in java

Q: I'm having trouble figuring out how to convert characters to their ASCII value in java. Is there a class like NumberFormat that will do it?

Answer: I can't see any problem here:

```
char ch = 'A'; // character 'A'
```

```
int i = (int)ch; // ASCII value for 'A' (=>65)
```

Yes. And just be aware that ASCII only runs from 0 through 127. Anything higher needs to be addressed differently, since Java is using Unicode values.



Q: I'm writing a program that makes I/O on a (huge) file.



Due to its size, I have to directly jump to a given line number so that I can make a `readLine()`. Is there a fast way to do so without traversing all the previous lines?

Note that I've tried the `LineNumberReader` class but it only keeps track of line numbers, and does not allow me to go to a specific position in the stream.

Answer, Part 1:

No, there is no easy way because the exact beginning of a line isn't stored anywhere. It's determined by the content of the file, and nobody is keeping track of the line feeds, carriage returns etc.

If the file doesn't change, you could find out the offset of each line relative to the beginning of the file once in a separate run over the original file and store these offset values in a binary file that has one long value for each line.

You can then load these long values into an array and access it whenever you need a line. You then seek to that position and read the line directly. If there are too many long offsets to be kept in memory, you still have a speed advantage; if you want the offset of line  $i$  ( $i$  zero-based, so the first line is 0, the second 1 and so on), you seek to  $i * 8$  (that's the size of a long) with a `RandomAccessFile`, load the offset value, go that position in the data file and load the line.

With intelligent caching, you could avoid quite some disk access.

--

Marco Schmidt

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## Threads



Can anyone please explain the difference between the two types: green threads and native threads?

Answer: Green threads is thread mechanism implemented in JVM itself. It is blind and can run on any OS, so actually all threads are run in one native thread and scheduling is up to JVM. This is disadvantageously for SMP systems, since only one processor can serve Java application.

Native threads is a mechanism based on OS threading mechanism. This allows to use features of hardware and OS. For example, there is IBM's JDK for AIX that supports native threads. The performance of applications can be highly improved by this.



Q: If a thread object has quit from run loop, how can I restart the thread object? ( I don't want to use some flags with wait/notify method to simulate restarting).

I try to use start() method, but it doesn't work.

Answer: No - Threads can't be restarted. You have to either loop with a wait/notify or create a new Thread.

--

J. Skeet

this advice first was published on [comp.lang.java.programmer](http://comp.lang.java.programmer)



I'm having trouble getting sleep to work properly. It seems to just return immediately, and not sleep for the requested time. Is there some trick I need to know about? The docs say that sleep takes an argument in milliseconds, but sleep(10000) seems to return immediately.

Answer: It can happen if another thread interrupts your sleeping thread.

sleep(10000) says that it just can sleep 10 sec if nobody needs it. That is reason why you do

```
try{
    sleep(10000);
}
```

```
catch(InterruptedException x){  
    //do smth here  
}
```

You just try, it is not an order. It tries but not always sleeps!



Hi, Is there somebody who can tell me why my thread sleeps longer then I told him to do...

I have a thread that has to sleep for 60000 millesec. But every 4, 5 minutes it sleeps for 61000 millesec.? I have to built an application that get the time every minute, but with this sleep I can't trust the java threads.

So can somebody tell me what is going wrong???

Answer: Really JDK never give you warranty that will wake your thread after XXX ms. You can be sure only that your thread will not be waked up before!

For good timing you should take another, better for real time performance, VM. For example PERC from [Nemonics.com](http://Nemonics.com) or something else...



I have created a program with a main method that instantiates and starts three threads, the first two of which are daemons. Why daemons does die when normal thread die?

Answer: Because of nature of daemon threads. They are alive if exists at least one "normal user's" thread. Otherwise they die immediately



Q: Does anyone know if there is a way for two threads to find each other if they are started in two different JVM?

In other words, I start a thread in one JVM, then I want to PipeWrite to another Thread that is doing a PipeReader. Any help would be appreciated!

Answer: Use of Piped streams is only supported inside the same JVM. If you want IPC, you have to use sockets or xfer data using files. I would recommend the sockets approach, it has the added advantage of working not only between process, but across the network as well.

Use of other IPC mechanisms, like shared memory, pipes, mail boxes, etc, are not supported by the JVM core. You could always roll your own native code, but why bother when you have access to sockets?

RMI is another possibility but it all depends on what you want to do. I'll let the RMI experts talk about this option. And CORBA, if you want to get real fancy.

--  
Joe



Q: When will a Thread Object be garbage collected?

I would like to ask a question about garbage collection of Thread Object.

When will a Thread Object be garbage collected?

When the reference count to it becomes zero, or when it enters the "Dead" state, i.e. the run() member function terminates?

Answer: Since Thread is also an Object, it will only garbage collected when the reference count is zero. You may think it is quite non-sense. the thread is useless when it enter "dead" state. why not garbage collect it? That's because the thread object itself may contain some other useful information even the thread dead , e.g. the result of the execution of the thread. Thus, it is not sensible to do garbage collect when the reference count is not zero.

Hope this answer your question.

--

Anthony



Q: I would like to ask a question about garbage collection of Thread Object.

When will a Thread Object be garbaged collected?

When the reference count to it becomes zero, or when it enters the "Dead" state, i.e. the run() member function terminates?

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--

Anthony

P.S. Important ad! Except when object A holds a reference only to object B and object B holds a reference only to object A. Both reference counts are non-zero, but both objects are eligible for garbage collection. Which is why few, if any, modern VMs use reference counting to determine eligibility for garbage collection.

Jim

Answer, Part 2: You can consider a Thread object as a normal Object for garbage collection purposes if you consider this one rule: A running thread will not be garbage collected.

That is, a normal running thread is a root object, so the Garbage Collector will not attempt to mark it for collection. When the thread is not running, though, normal Garbage Collection rules apply (i.e. total # references == 0 then collect).

To get a thread with different behavior,  
see the Thread.setDaemon(boolean bState) method.

--Brian

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John Andersson

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